Service Station Manual

Legend

USA

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MODEL NO.: 00300728

NOTICE

All information contained in this manual is based on the latest product information at the time of publication. Bajaj Auto Ltd. accepts no liability for any inaccuracies or omissions in this publication , although every possible care has been taken to make it as complete and accurate as possible. All procedures and specifications subject to change without prior notice. The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to product manufactured previously. Contact your authorised bajaj dealer for the latest information on product improvements incorporated after this manual was issued.

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FOREWORD

We have pleasure in presenting this Service Manual for Bajaj **LEGEND** This manual is designed by bajaj auto ltd., primarily for use by authorised bajaj dealers and their qualified mechanics. However, it contains enough details and basic information to make it useful to the vehicle owner who desires to carry out his own basic maintenance and repair work.

Since a certain basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily; the adjustments, maintenance, and repairs should be carried out only by qualified mechanic. If proper adjustment can not be obtained by following the procedures in this manual, find out the cause and correct as necessary.

In order to perform the work efficiently and to avoid costly mistakes, the mechanic should read the text thoroughly, familiarising himself with the procedures before starting work, and then do the work carefully in a clean area. Wherever special tool or equipment is specified, make sure that same are used. Precision measurements can only be made if proper instruments are used and the use of substitute tools may adversely affect safe operation of the vehicle.

The safety precaution and special instructions have been printed in bold type to draw your attention. These instructions indicates points of particular interest for more efficient, convenient and safe operation. It is essential that you do not neglect these instructions while carrying out repairs so as to avoid any personnel injury and damage to or destruction of equipments and vehicle.

As the technique of repair/maintenance procedure develops and as the manufacturing process changes, it is likely that this Service Station Manual will be subject to modifications as necessary. The manual is therefore, to be taken valid for operation on the date of its print. For subsequent modifications and informations always refer to Service Information Circulars.

This manual has been divided into various sections for convenience of presenting the contents in a useful manner. Please refer to the detailed Index for locating the section/information you want.

WARNING : This manual is intended for use by experienced mechanics, and is not intended for use by the general public. Therefore, please refer to the appropriate Owner's Manual for warnings applicable to this scooter. Mechanical repair can be hazardous, and is very dangerous if you are inexperienced or unknowledgeable. We strongly urge you to never undertake repair operations with which you are not completely familiar. The repair operations described in this book must be carried out exactly as described, in order to ensure that the scooter is returned to safe condition after you have worked on it. Failure to observe this warning can lead to a dangerous condition which could lead to an upset, accident, serious injury, or even death.

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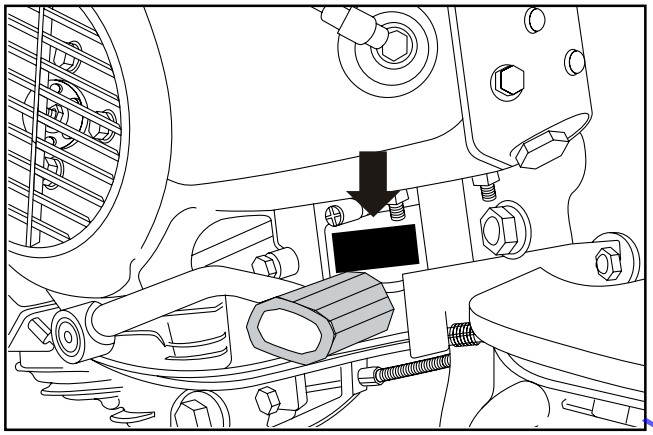
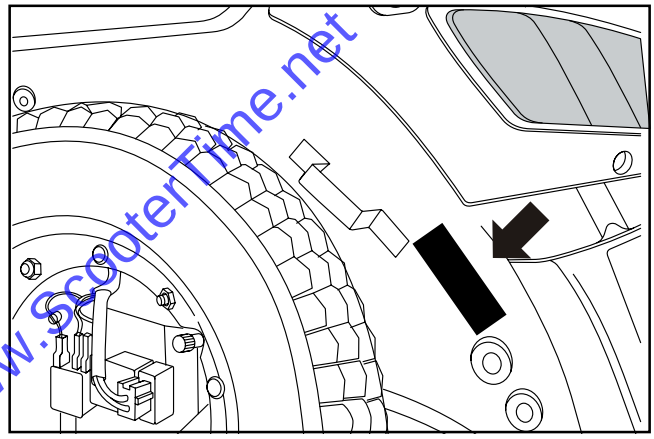
IDENTIFICATION DATA

The chassis and engine serial numbers are used to register the vehicles. They are the only means of identifying your particular vehicle from the other of the same model and type. These serial numbers may be needed by your dealer when ordering the parts. In the event of theft, the investigating authorities will require both these numbers in addition to the model, type and any special features of your vehicle that can help identification.

Serial numbers with prefix **28 C** and **28 E** are stamped on chassis and engine of the vehicle in the position indicated in the figures below :



Engine number



Chassis number

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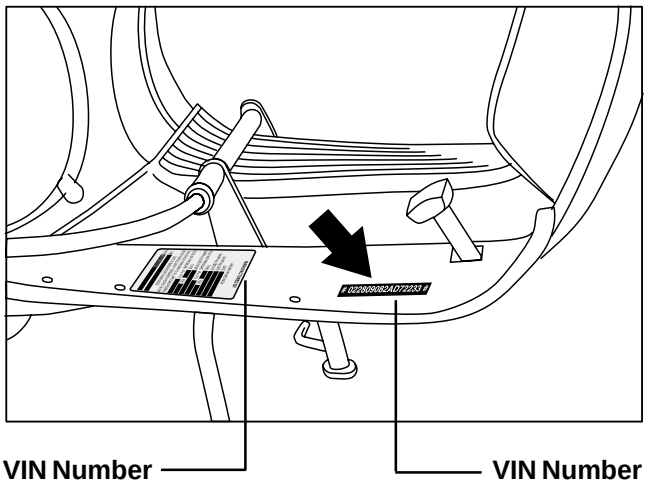
The chassis and engine numbers serial numbers are used by the factory to identify your particular vehicle. Always quote these numbers when ordering parts or when making inquiry with regard to service operations. The vehicle is identified by the Department of Motor Vehicles in your state by the Vehicle Identification Number. It is a crime in all states to alter any of these numbers.

Location of VIN Number



TECHNICAL SPECIFICATIONS

ENGINE & TRANSMISSION

Type	:	Four stroke, Forced Air cooled.
No. of cylinders	:	One.
Bore	:	57.00 mm
Stroke	:	57.00 mm
Engine displacement	:	145.45 cc
Maximum net power	:	9.00 HP / 6.71 kw at 6000 rpm.
Maximum net torque	:	1.15 kgf.m.at 4000 rpm
Compression Pressure	:	12 ± 1 kg/cm^2
Compression Ratio	:	9.3 : 1
Idling speed	:	1200 ± 150 rpm
Ignition system	:	C. D. I.
Fuel	:	87 octane petrol.
Carburettor	:	Keihin PB 20
Spark Plug	:	Champion PL 7 YC
Spark plug gap	:	0.6 to 0.7 mm
Lubrication	:	Wet sump, forced lubrication.
Starting	:	Kick start / Electric start
Clutch	:	Wet, multidisc type.
Transmission	:	4 speed constant mesh.
Overall gear ratios		
First gear	:	17.33 : 1
Second gear	:	10.81 : 1
Third gear	:	7.96 : 1
Fourth gear	:	6.11 : 1
Primary gear ratio	:	2.75 : 1

CHASSIS AND BODY :

Frame type	:	Monocoque construction
Suspension		
Front	:	Leading link Anti-dive ,variable rate coil spring & double acting shock absorber
Rear	:	Variable rate coil spring & double acting shock absorber
Brake type		
Front & Rear	:	Mechanical expanding shoe friction type.
Brake size		
Front	:	150 mm dia / 5.91"
Rear	:	130 mm dia / 5.12"
Tires		
Front	:	3.50 X 10, 4 P.R.
Rear	:	3.50 X 10, 4 P.R.
Tire pressure -		
FRONT	:	1.25 kg/cm^2 (18 Psi)
REAR (without pillion)	:	1.75 kg/cm^2 (25 Psi)
REAR (with pillion)	:	2.50 kg/cm^2 (36 Psi)
Fuel tank capacity	:	1.32 Gal. (5 litres)

CONTROLS :

Steering	:	Handle bar
Accelerator	:	Twist grip type on right hand of handle bar
Gears	:	Twist grip type on left hand of handle bar
Clutch	:	Lever operated on left side of handle bar
Brakes		
Front	:	Lever operated on right side of handle bar
Rear	:	Pedal operated by right foot.

ELECTRICALS :

System	:	12 Volts, DC
Battery	:	12V- 9Ah
Head lamp	:	35/35 W
Tail/stop lamp	:	5 / 10 W
Side indicator lamp	:	10 W
Horn	:	12V, DC

DIMENSIONS :

Length	:	1825 mm / 71.85"
Width	:	685 mm / 26.97"
Wheel base	:	1275 mm / 50.20"
Height	:	1150 mm / 45.28"
Saddle height	:	805 mm / 31.69"

WEIGHTS :

Curb weight	:	115 kg / 253 lbs
Max.total weight (including driver)	:	256 kg / 564 lbs

PERFORMANCE :

Maximum speed	:	90 km/h / 55 mph with 68 kg/150 lbs (single rider) payload
Climbing ability	:	25.0 % max.

NOTES :

- **All dimensions are under unladen condition.**
- **Above information is subject to change, for the latest information please contact Service dept. .**

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GENERAL INFORMATION

RUNNING IN :

In the process of manufacturing the best possible materials are used and all machined parts are finished to a very high degree of accuracy. But it is still necessary to allow the moving parts to break in before subjecting the engine to maximum stresses. **The future performance and reliability of the engine depends upon the care and restraint exercised during its early life.** The general running in rules are :

- Always keep to the specified running-in speed.
- Do not ride the vehicle at high speed.
- Do not race the engine.
- Do not run the engine under constant speed for prolonged period, please vary the speed for better bedding in of the mating parts.
- Do not start moving or race the engine immediately after starting. Run the engine for a few minutes at idle speed to give the oil a chance to workup into all engine parts.

The table given below shows the maximum permissible speed during running in :

Distance in miles	Max. vehicle speed in gears (mph)			
0-1200	Ist	IInd	IIIrd	IVth
	10	20	30	40

STARTING : (Kick start)

- Turn the Ignition switch to 'ON' position.
- Confirm that the vehicle is in neutral gear, turn indicator switch is “OFF” and supplementary engine stop switch in “RUN” position.

How to operate kick:
Move the kick slowly.
Ensure that ratchet is engaged, then kick.

When engine is cold :
Use ‘CHOKE’ only for cold starting. Do not open throttle. Pull the choke lever and operate kick for starting. Release the Choke lever to ‘ OFF’ position immediately once the engine starts.

When engine is warm :
Do not open throttle while kick starting. If the engine fails to start with 2-3 kicks, slightly open the throttle (not more than 1/4 th turn) before kicking.

STARTING : (With Self Start)

- Turn the Ignition switch to 'ON' position.
- Confirm that the vehicle is in neutral gear otherwise engine will not start.
  (Neutral switch is fitted on gear shifter assly for this purpose as a safety feature.)
- Confirm that the turn indicator switch is “OFF” and supplementary engine stop switch in “RUN” position.
- Press the Start Button to start the engine.
- Release start button as soon as engine starts.

When engine is cold :
- Pull the choke lever in 'ON' position.
- Press the Start Button with accelerator in completely closed position.
- Once the engine warms up, release choke lever to 'OFF' position .

When engine is warm :
- While starting warm engine, open the accelerator 1/8th to 1/4th and press the Start Button.

NEVER REV UP THE ENGINE TO HIGHER RPMs IMMEDIATELY AFTER STARTING OR IN NEUTRAL GEAR. If the engine is raved to higher RPMs immediately after starting it may lead to severe engine damages as lubricating oil take some time to reach all th components.

Moving from ‘Stand still position’
Pull the clutch lever and twist the gear control tube upwards in one smooth motion to put the vehicle in 1st gear. Release clutch gradually and simultaneously open the throttle gradually to move away from stand still position.

Don’t run vehicle with clutch lever partially depressed or don’t slip the clutch to overtake or to climb a gradient. This will damage the clutch.

Downshifting of gears i.e.. Shifting from 4th to 3rd to 2nd to 1st gear :- Reduce the speed of the vehicle. Depress the clutch lever completely and twist the gear lever upwards and release the clutch lever gradually and increase throttle. For further ease of gear shifting slightly open the throttle momentarily while depressing the clutch lever and then twist the gear lever upwards.

Do not tilt the vehicle towards spare wheel side. Engine oil may drain out from the crankcase breather tube and hence there will be a drop in oil level in the crankcase. Accidently if the vehicles falls down on spare wheel side, ensure correct oil level after lifting and placing the vehicle on stand.

Braking :

For stopping the vehicle smoothly and safely first close the accelerator and then apply front and rear brake simultaneously. **Using only the front or rear brake is dangerous and cause skidding and loss of control.** Anticipate your stop well in advance for avoiding sudden braking which may be dangerous.

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Stopping the engine :

- Close the throttle.
- For stopping the engine, turn the key to 'OFF' position of ignition switch.
- Supplementary engine stop switch on RH control switch can also be used to stop the engine when ignition switch is not to be put off.

Parking :

- Always prefer to park the vehicle on level ground and on the centre stand.
- Lock the steering-cum-ignition lock.

DAILY SAFETY CHECKS :

Check the following items each day before you ride. These checks hardly require any time and habitual performance of these checks will help to ensure a safe, reliable ride.
If any irregularities are found during these checks refer to the maintenance chapter or contact an authorised bajaj dealer for the action required to return your vehicle to a safe operating condition.

Fuel :

Enough fuel for the planned distance of travel & check leakage if any.

Electrical :

Operation of switches, lighting of head, tail /brake lamp, horn sound ,battery electrolyte level and battery condition.

Brakes :

Front and rear brake effectiveness, lever play.

Tires :

Inflation pressure, cracks, cuts and foreign material embedded in tread.

FUEL SAVING TIPS :

A well maintained vehicle can contribute a lot to the saving of petrol. Following are a few simple tips for keeping your vehicle healthy and your pocket wealthy.

Good riding habits :

- Ride smoothly and steadily at an optimum driving speed of 18 to 25 mph.
- Don't waste petrol by stop and go riding and by sudden starts and stops.
- Avoid harsh braking. Do not brake unless it is very essential, anticipate your stops, turns well in advance and slow down by deceleration.
- Choose a proper route to ride especially in peak hours.
- Don't overload the vehicle above the specified pay load.
- Use the accelerator judiciously. Think of the accelerator barrel as fuel cock. The more you will turn it, the more petrol will be consumed.
- For better fuel economy,change the gear as given below :
  Change 1st to 2nd gear at 6 mph.
  Change 2nd to 3rd gear at 12 mph.
  Change 3rd to 4th gear at 18 mph.
  Drive at 18 to 30 mph in 4th gear.
- Cut off the engine if you want to stop more than for two minutes. Remember, idling costs fuel.

Vehicle condition :

- Check all fuel lines and connections whenever your vehicle smells of petrol. Never fill the petrol right up to the filler cap.
- Always maintain the recommended tyre pressure and check it every week. Under-inflated tyres increases rolling resistance and thus costs both fuel and tyre life.
- Ensure that the brakes are not dragging/binding.
- For keeping the engine healthy :
  - ❑ Inspect and clean the spark plug, adjust the gap.
  - ❑ Clean the air filter.
  - ❑ Service carburettor and adjust idling speed.
  - ❑ If there is a power loss, then contact an authorised bajaj dealer and get the vehicle properly tuned.

Regular maintenance will save fuel and money assuring you trouble free, enjoyable and safe riding.

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The maintenance and adjustments outlined in this section are easily carried out and must be done in accordance with the periodic maintenance chart to keep the vehicle in good running condition. The initial maintenance is vitally important and must not be neglected.

PERIODIC MAINTENANCE CHART

SR. NO.	FREQUENCY / OPERATION	WHICHEVER COMES FIRST → EVERY	ODOMETER READING (MILES) 300	1200	3000	6000	9000	12000	15000
1	Servicing		●	●	●	●	●	●	●
2	Engine oil: Replacement		●	●	●	← EVERY 3000 MILES →			
3	Oil strainer cleaning		●	●	●	← EVERY 3000 MILES →			
4	Air filter element cleaning ⁂ **	3000 MILES			●	●	●	●	●
5	Spark plug : Cleaning/gap setting **		●	●	●		●		●
	: Replace	6000 MILES				●		●	
6	Carburettor cleaning /overhaul **				●	●	●	●	●
7	Fuel line / Fuel Filter element cleaning				●	●		●	●
	Fuel Filter replacement if required	6000 MILES				●		●	
8	Check & adjust valve clearance **		●	●	●	●	●	●	●
9	Control cables adjustment		●	●	●	●	●	●	●
10	Tightening nuts/bolts/fasteners	Month	●	●	●	●	●	●	●
11	Check functioning of all electrical components	Day	●	●	●	●	●	●	●
12	Head lamp alignments- check & adjust		●	●	●	●	●	●	●
13	Tire rotation	6000 MILES							
14	Tire pressure	Week	●	●	●	●	●	●	●
15	Steering column : check and adjust					●		●	
16	Front/rear brake : inspection/adjustment		●	●	●	●	●	●	●
	: Overhaul					●		●	
17	Check battery electrolyte level	Month	●	●	●	●	●	●	●
	Apply petroleum jelly on battery terminals	Month	●	●	●	●	●	●	●
18	**Lubricate**								
	a) Front and rear brake levers		❑	❑	❑	❑	❑	❑	❑
	b) Control cables , gear shifter					■		■	
	c) Speedo pinion/gears/cable					❑		❑	
	d) Brake cam shafts	After		❑	❑	❑	❑	❑	❑
	e) Stand pivot	washing	❑	❑	❑	❑	❑	❑	❑
	f) Front fork bearing races/balls	the vehicle				❑		❑	
	g) Wheel bearings					❑		❑	
	h) Front suspension		Refer Page No. 15						

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● **Indicates operation to be performed.**

■ **Indicates lubrication by SAE 20W40 of API SC/CC grade oil.**

❑ **Indicates lubrication by Lithium-calcium soap base grease.**

⁂ **To be cleaned more frequently in dusty area.**

** **Must be performed to maintain emissions warranty.**

CHECK & ADJUSTMENTS TO BE CARRIED OUT DURING P.D.I., 1st, 2nd, 3rd , 4th & 5th SERVICING

Sr. No.	Operation to be carried out	P.D.I.	1st	2nd	3rd.	4th	5th
1	Wash and clean the vehicle on receipt		●	●	●	●	●
2	Check and correct tyre inflation pressure including that of spare wheel	●	●	●	●	●	●
3	Check all nuts and bolts for tightness especially handle bar bolt, engine foundation bolt, shock absorber nuts and wheel nuts etc.	●	●	●	●	●	●
4	Check Engine oil level and top up, if necessary.	●					
5	Flush and refill Engine oil		●	●	●	●	●
6	Remove and clean air cleaner filter element		●	●	●	●	●
7	Clean spark plug , adjust the gap and refit		●	●	●	●	●
8	Clean the carburettor / adjust idling speed				●	●	●
9	Check & adjust valve clearance		●	●	●	●	●
10	Carry out lubrication as per lubrication chart		●	●	●	●	●
11	Check steering-cum-ignition lock & other lock for proper operation.	●					
12	Check for smooth operation of choke lever and accelerator.	●					
13	Check front & rear brakes for efficient working.	●	●	●	●	●	●
14	Check and adjust steering.	●				●	
15	Check all lights, horn, switches, speedometer for satisfactory working.	●	●	●	●	●	●
16	**Initial charging** of battery. Install & apply Petroleum Jelly on Terminals.	●					
17	Check battery electrolyte level & apply petroleum jelly on terminals		●	●	●	●	●
18	Test drive the vehicle.	●	●	●	●	●	●
19	Repair for any other defects seen or observed during test drive	●					
20	Clean the vehicle before delivery.	●	●	●	●	●	●

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SCHEDULED MAINTENANCE

CLEANING

The vehicle must be cleaned periodically by using pressurised water. Before cleaning the vehicle cover the important parts like ignition switch, silencer, ignition unit, H.T. coil,starter motor by plastic bags. Don't apply the jet of water directly towards electrical parts such as switches, ignition unit, coils etc. otherwise they may get damaged.

Brushing with parafin and wiping dry with clean rag is advisable for external cleaning of the engine. All painted surfaces should be washed with water. Do not use kerosene or detergent soap on painted surfaces as it damages the paint and turns it dull.

If necessary, blow with compressed dry air, the head lamp reflector, clean or wipe off dust with a very soft feather brush. After washing, dry the vehicle and carry out the lubrication.

WARNING: Washing your scooter will allow the brakes to become wet, with the same effect as riding on a wet road. Whenever the brakes become wet, always dry them by gently applying the brakes, repeatedly, until the heat causes the brakes to dry and full brake function is restored. Failure to follow this procedure can lead to loss of brake effectiveness and a serious accident.

PERIODIC MAINTENANCE

Periodic maintenance (in accordance with the periodic maintenance chart) of a vehicle is most important to prolong its life , trouble free running and ensure your safety while driving.

LUBRICATION

To reduce the friction between two moving parts lubricate them periodically. Insufficient lubrication will cause rapid wear, damaging the parts prematurely. Lubricate everytime after washing the vehicle and whenever the vehicle is operated under wet, rainy conditions. Before lubricating, clean off any rusty parts and wipe off old grease, oil or dirt.

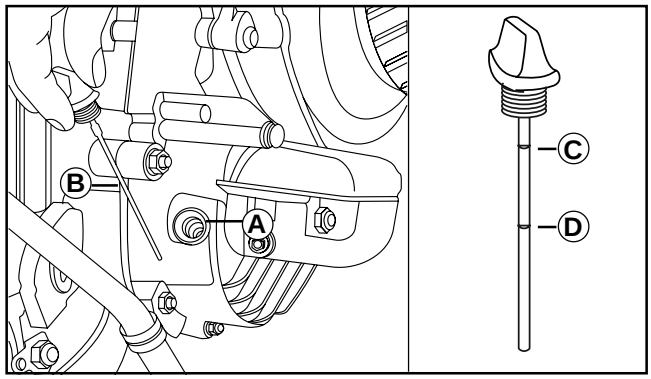
A few drops of oil are effective to keep bolts and nuts away from rusting and sticking. This makes removal easier. Please refer lubrication chart, for details of lubrication.

ENGINE OIL : Check engine oil level daily.

For proper functioning of cylinder block / piston , crankshaft, tappets, clutch and transmission, the oil should be maintained at an appropriate level.

Oil level inspection :

- Place the vehicle on centre stand, on a level ground.
- Clean the surface area around the oil filler opening.
- Unscrew the dipstick from oil filler opening hole and wipe it dry.
- Put the dip stick, on oil filler opening , take out the dip stick and observe the oil level on it.
- There are two marks engraved on it. If the level is below the lower level mark, top up with the appropriate quantity of recommended oil up to upper level mark. If the oil level is too high i.e. above the upper level mark, drain some oil from drain hole.
- Fit back the dipstick and tighten it securely.
- Ensure that there is no oil leakage.



A) Oil filler hole **B) Oil level gauge**
C) Upper level **D) Lower level**

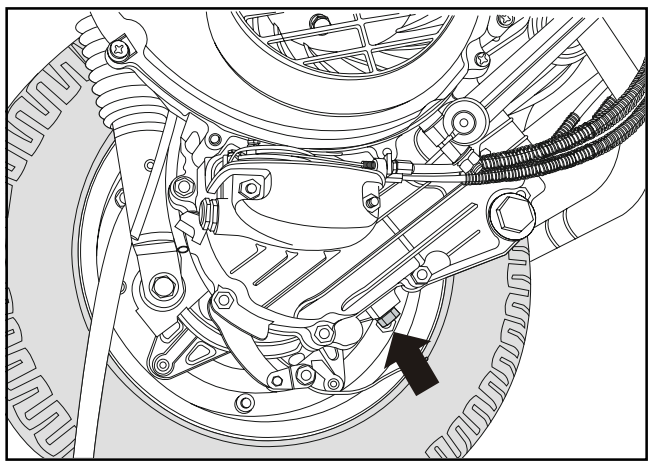
Oil replacement:

If the oil is used for a longer duration its lubricating performance deteriorates. So it is necessary to replace the oil in accordance with periodic maintenance chart. For replacing the oil follow the procedure given below :

- Run the vehicle for few minutes.
- Place the vehicle on main stand. Let the oil settle.
- Remove the oil drain bolt with its aluminium washer. Also take out dip stick. Let the oil drain completely. Tighten the drain bolt with new aluminium washer securely. (Tightening torque 2.6 - 3.0 kg.m.)
- By using a funnel pour the recommended oil from the oil filler opening hole or open Inlet tappet cover & pour oil.
- Fit back the dip stick and tighten it securely.
- Ensure that there is no oil leakage.

Do not use inferior grade of oil as a replacement for the recommended oil, otherwise it will lead towards engine troubles.

Oil capacity**: 1100 ml (For newly assembled engine)**
: 1000 ml (For drain & refill)
Recommended oil **: SAE 20 W40 of API SC/SF grade**
Replace oil after every 5000 kms / 3000 miles.



Drain bolt

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SPARK PLUG

The condition of the spark plug indicates how the engine is operating. A defective spark plug will lead to difficult starting and poor performance. Engine heat and combustion chamber deposits will cause any spark plug to slowly break down and erode over a period of use. The spark plug should be removed periodically and inspected for electrode gap and the colour at the tips, at regular intervals as specified in periodic maintenance chart.

If the engine is operating correctly and the machine is being ridden properly, the colour at the electrode tip will be greyish yellow to light brown. The centre electrode will not have pitting and the side electrode will have constant thickness. The combustion chamber residues left on the tip gives an indication of engine performance as follows :

- **Greyish yellow to light brown :** Correct running of engine. Spark plug is perfectly matched for optimum engine performance.
- **Shining black or wet carbon deposits :** Presence of oil in fuel.
- **Burnt white/pearly deposits of metallic enamel beads:** Overheated engine, too lean air fuel mixture, spark plug not fully tight, use of hotter plug.
- **Dull black velvety carbon deposits :** Too rich fuel air mixture, electrode gap too wide, plug too cold, clogged air cleaner, insufficient high tension voltage, continuous slow speed driving.

Clean the spark plug preferably in a sand blasting device and thoroughly clean off abrasive material left on it .

Measure the gap between the electrodes with the wire type thickness gauge, adjust the gap if incorrect by bending the outer electrode carefully. The gap at the electrode for optimum performance is 0.6 to 0.7 mm.

Connect the H.T. lead to spark plug, ground the plug and check the current jumping across the plug electrode. The bright blue spark should jump across the electrodes.

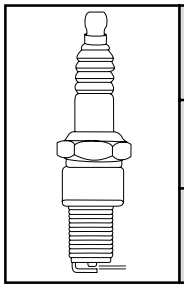
Replace the spark plug in case of following conditions:

1. Excessive electrode wear
2. Cracked insulator.
3. Chipped off insulator
4. Shorted plug.

While installing back the spark plug, check for ;

1. The condition of sealing washer.
2. Cleanliness of contact surfaces of spark plug seat and cylinder head seat.

When installing the plug, first screw it in with finger and then use the spanner for the final tightening only. This will prevent chances of stripping of the cylinder head threads.



Recommended Spark Plugs : **Champion PL 7 YC**
Spark Plug Cap **: Resistance**
Electrode gap : **0.6 to 0.7 mm**

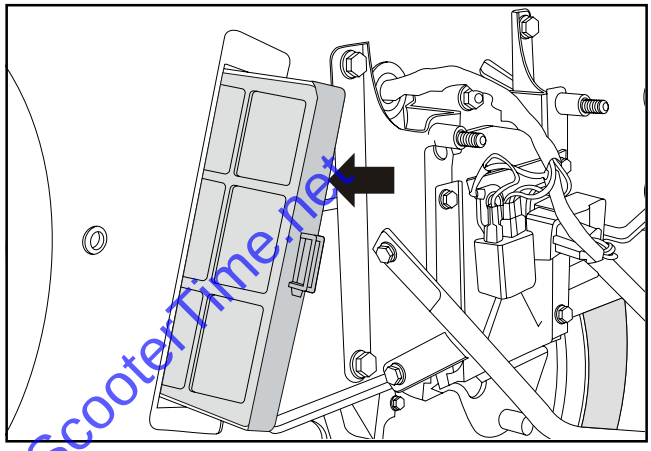
Spark Plug gap

AIR FILTER :

Bigger PU foam air filter is provided for better breathing. If the air filter is clogged, intake air flow will be restricted which results in low engine power ,increase in fuel consumption & spark plug fouling.

Air filter removal :

- Open seat lock & lift the seat. Remove LH bonnet.
- Remove spare wheel.
- Pull 'Cover air filter slot' from slot provided on chassis for inserting air filter assly.
- Take out air filter assly carefully from slot.
- Remove air filter element.



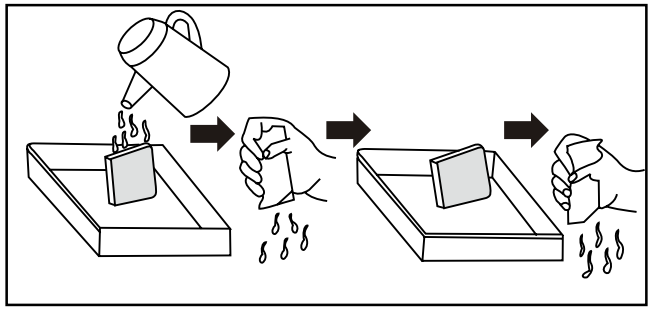
Removal of air filter

Air filter cleaning :

- Soak the element for about 1/2 minute in high flash point stoddard solvent or equivalent.
- Squeeze the element, blow the air so that it dries.
- Dip the element in 20 W 40 oil. Soak the element for about 1/2 minute.
- Squeeze the element hard, manually so that excess oil is removed.
- Assemble the air filter assly. insert it inside slot.
- Fix the 'Cover air filter slot' on chassis.

DO NOT USE PETROL OR LOW FLASH POINT SOLVENT FOR CLEANING. THIS MAY CAUSE BACK FIRE.

Air filter element should be cleaned as per periodic maintenance chart. If vehicle is operating in dusty roads / area the element should be checked and cleaned more frequently.



Wash **Squeeze Out And Dry** **Oil** **Squeeze Out Excess oil**

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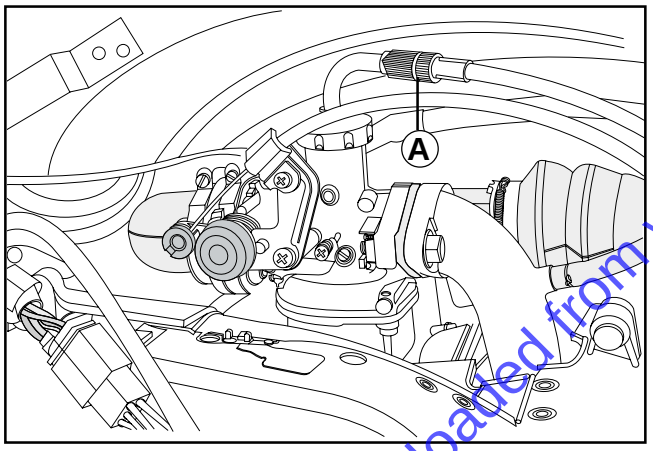
ACCELERATOR GRIP

The accelerator grip controls the movement of carburettor throttle valve and ignition timing (For TRICS). If the accelerator grip has excessive play due to cable stretch, it will cause a delay in carburettor response especially at low engine rpm and cause improper ignition timing. Also throttle valve will not open completely in full throttle condition. On the other hand, if the accelerator grip has no play, control of carburettor throttle valve will be difficult. If the inner cable is overstretched, idling rpm will be too high and cause improper ignition timing.

ACCELERATOR PLAY ADJUSTMENT :

- Check the accelerator play by lightly turning the grip back and forth.
- Accelerator play can be adjusted by cable adjuster **(a)** provided on carburettor. Loosen the adjuster lock nut and turn the adjuster until specified free play is obtained. Retighten lock nut after adjustment is over.

ACCELERATOR GRIP PLAY : 4 - 5 MM.



Adjusters (A) on Carburettor.

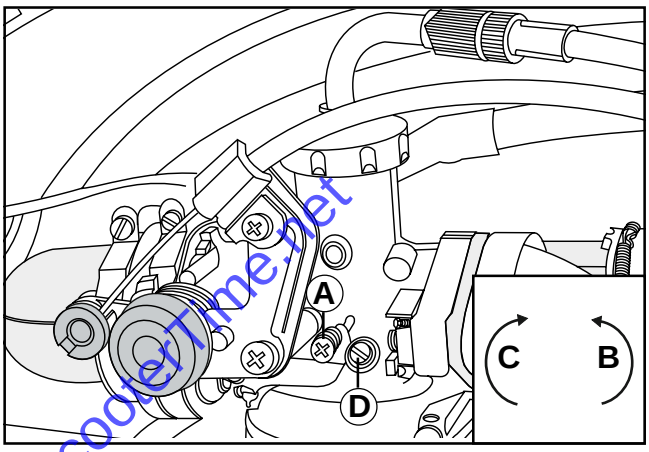
CAUTION : Always maintain correct accelerator play. It is very important for vehicles fitted with 'TRICS' as the ignition timing is regulated by throttle opening.

IDLING SPEED ADJUSTMENT

Whenever the idling adjustment is disturbed follow the procedure given below for setting proper engine idling.

- Open seat lock & lift the seat. Remove engine.
- Start engine & drive it for atleast 5 kms.or warm the engine till the oil temp. reaches 80^0 C.
- Then set the engine idling r.p.m. by rotating the idle adjustment screw clockwise or anticlockwise with the help of a screw driver.
- For the precise adjustment of idling speed, use of tachometer is recommended.
- Open and close the throttle a few times to make sure that the idling speed does not change. Readjust if necessary.
- With the engine idling, turn the handle bar to either side. If the handle bar movement changes the idling speed, the accelerator cable may be improperly adjusted, damaged or improperly routed. Rectify any of these conditions before riding.
- Do not attempt to compensate for faults in other systems by adjusting the idle speed.

Normal idling speed : 1200 ± 150 rpm



A. Idling adjustment screw **B. Decrease speed**
C. Increase speed **D. Air screw**

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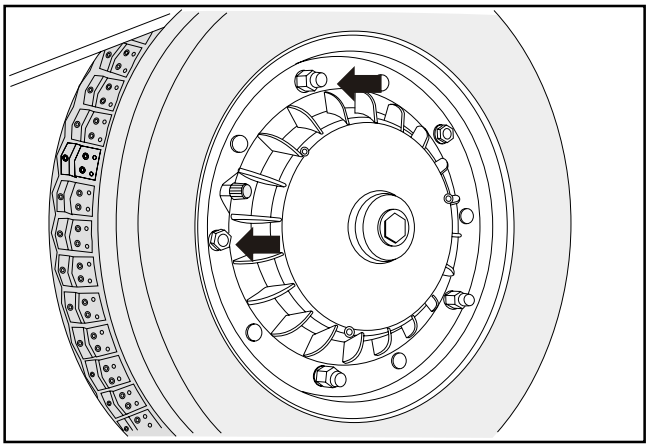
REMOVAL OF WHEELS

For removal of wheels in case of puncture or Tire rotation, follow the procedure given below :

Front wheel :

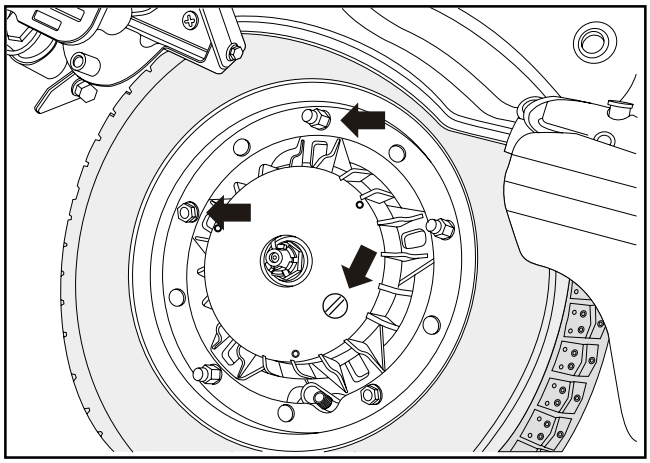
- Rotate wheel cover cap in anticlockwise direction and take out.
- Pull wheel cover.
- Remove 5 nuts (3 special & 2 regular) and take out front wheel assly.
- After mounting wheel, check the sequence of 5 mounting nuts.



Front wheel nuts

Rear wheel :

- Remove LH cover.
- Remove spare wheel
- Rotate wheel cover cap in anticlockwise direction and take out.
- Pull wheel cover.
- Tilt the vehicle on engine side.
- Remove 5 nuts (3 special & 2 regular) and take out front wheel assly.
- After mounting wheel, check the sequence of 5 mounting nuts.



Rear wheel nuts **Inspection window**

Installation :

- Install the rear wheel on brake drum studs.
- Install the plain and spring washers.
- Install the nuts and tighten them securely (Tightening torque - 2 to 2.5 kg.m.)

BRAKES

Brakes should always be maintained in perfect condition for safety. Brake drum wear, brake lining wear and brake cable stretch causes the brakes to go out of adjustment. This increases the free play at the brake lever and reduces the braking efficiency.

FRONT BRAKE ADJUSTMENT

Check the front brake lever play. If it is more or less than the standard, adjust the front brake.

- The adjusting nut for front brake is located on front brake inner cable at the end.
- Depending upon the adjustment required, turn the adjuster back or forth as follows :

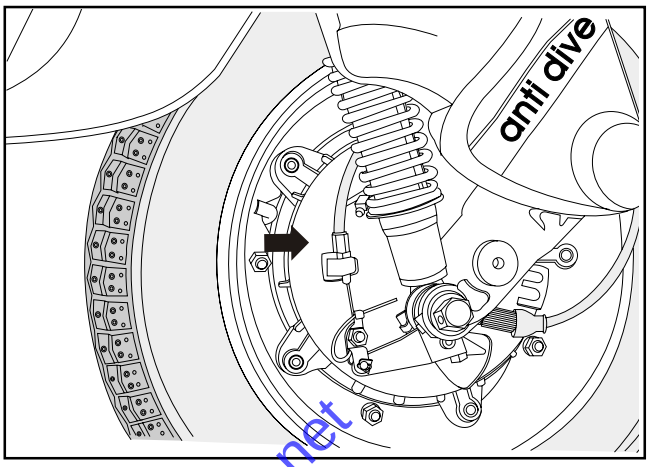
- Turning the adjusting nut in (clockwise direction) increases the play at the brake lever.
- Turning the adjusting nut out (anticlockwise direction) reduces the play at the brake lever.

- After adjustment, check the wheel for free rotation and for braking effectiveness.

"If the brake remain ineffective despite above adjustments, check brake shoes , brake drum & brake cable."

WARNING: Never permit the operation of a scooter with a brake cable in anything but absolutely perfect condition. Any wearing or fraying of the cable can lead to ineffective brakes which can lead to loss of control, an upset, or a serious accident with subsequent serious injury or even death.

Front Brake Lever Play	3 to 5 mm



Front brake adjuster

REAR BRAKE ADJUSTMENT

Check the rear brake pedal play as shown in figure. If it is more or less than the standard, adjust the rear brake.

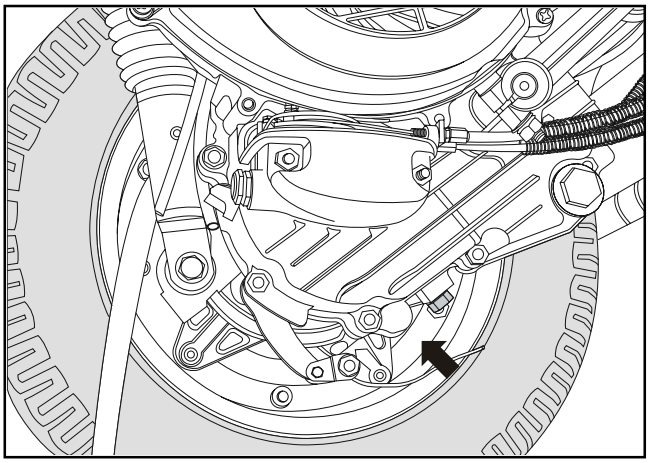
- The adjusting nut for rear brake is located on rear brake inner cable at the end.
- Depending upon the adjustment required, turn the adjuster back or forth as follows :

- Turning the adjusting nut in (clockwise direction) increases the play at the brake pedal.
- Turning the adjusting nut out (anticlockwise direction) reduces the play at the brake pedal.

- After adjustment, check the wheel for free rotation and for braking effectiveness.
- Rear brake shoe, liner wear can be checked through the inspection window on rear brake drum, after unscrewing the plug.

"If the brake remain ineffective despite above adjustments, check brake shoes , brake drum & brake cable."

Rear Brake pedal Play	10 to 15 mm



Rear brake adjusting nut

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TIRES

For better road-holding and longer tire life always maintain correct air pressure. Overinflation will cause bumpy ride and faster wear of the tire at the centre. Under-inflation will cause poor steering and faster wear at the sides.

Recommended Tire Pressure

Front		**1.25 Kg/cm² (18 PSI)**
Rear	**Solo**	**1.75 Kg/cm² (25 PSI)**
	With Pillion	**2.50 Kg/cm² (36 PSI)**

Tire wear/damage :

Worn out tire is unsafe. Replace the tyre when the tread depth reaches to less than 3 mm.

Tire tread depth :

Measure the tire tread depth by using the depth gauge. If tread pattern is not visible, replace the tire. Also replace the tire when the tire tread depth is found to be less than the service limit.

Standard	Service limit
5 to 6 mm	3 mm

Tire rotation :

To even out tread wear it is necessary to change the face of tire and to rotate it position wise every 10000 kms.

Change the face of the tire in relation with the wheel rim and inflate tire to the specified pressure. The good tire should be kept at the rear, which is a driving wheel.

CONTROL CABLES :

Due to continuous operation of cables by the brake levers and throttle the inner cables are subjected to wear and tear. Cable maintenance is primarily concerned with preventing deterioration due to rust and weather as well as providing proper lubrication for free movement of inner cables in the outer casing. For checking any of the control cables follow the procedure given below :

- Disconnect the inner cable.
- Check free movement of the cable within its casing. If movement is obstructed, check for fraying or kinking of cable strands. If such damage is noticed, replace the inner cable or cable assembly as necessary.
- To lubricate cable, hold it in vertical position. Apply necessary oil to uppermost end of cable and move the inner cable to and fro. Leave it in vertical position until the oil flows down to the lower end. Allow excess oil to drain and reinstall the cable.

Note : Friction free cables do not require lubrication.

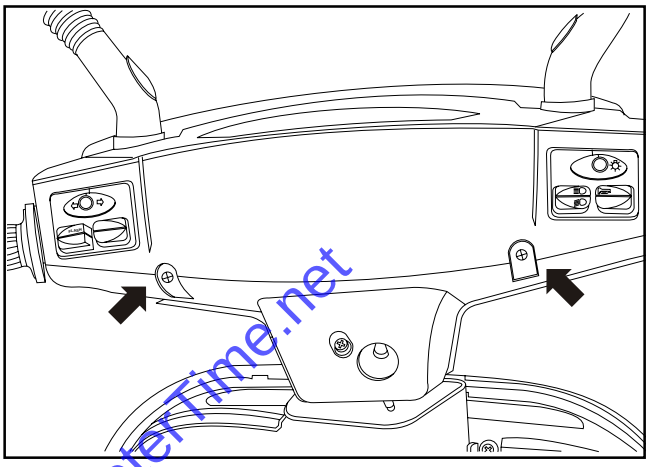
BULB REPLACEMENT :

When exchanging the bulbs, always replace the bulbs with that of the specified type and rating. This is important to prevent the electrical lighting circuit from malfunctioning.

Head light bulb replacement :

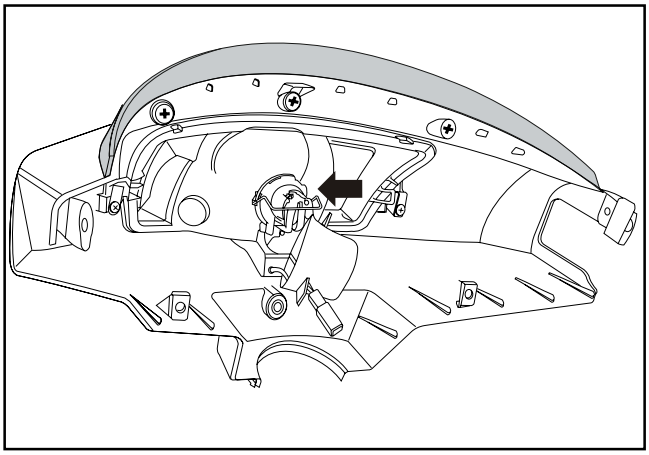
For replacing head light bulb follow the procedure given below :

- Remove 2 screws on Handle bar rear cover holding Handle bar front cover.



Handle bar cover (Rear) mounting screws.

- Remove one screw provided on H. Bar front cover just below H. Light adjustment screw.
- Carefully disengage the locking lugs of handle bar front cover by prying with the help of a small screw driver.
- Disconnect Head Lamp harness coupler . Take out Handle bar front cover with head lamp assly.
- Slide bellow from head lamp bulb holder.



Head light bulb holder

- Remove bulb holder & replace bulb.

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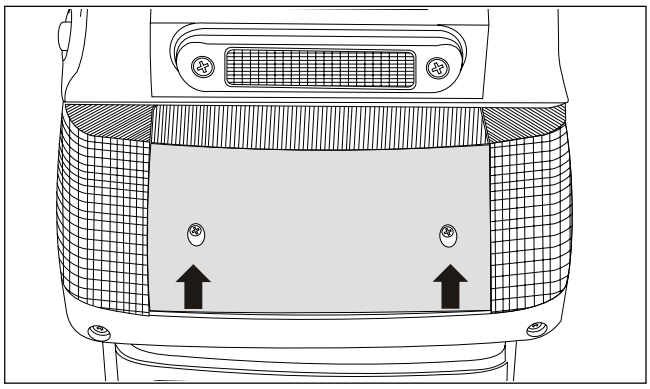
Brake/Tail light, rear blinkers bulb replacement :

For replacing Tail/stop bulb or rear blinkers bulb, remove 2 screws for lens, take out lens & replace bulb.



Removal of screws for lens

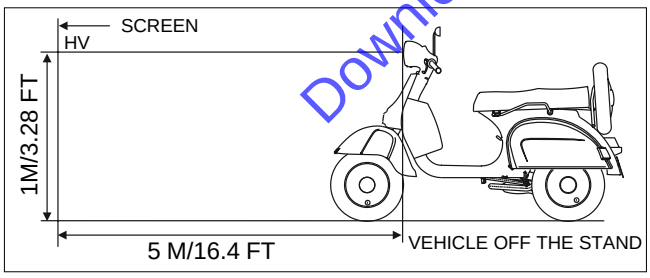
Front blinker bulb replacement :

- Remove 2 mounting screws for nose grill and take out nose grill.
- Remove 2 mounting screws for blinker and take out blinker assly.
- Take out holder & replace the bulb.

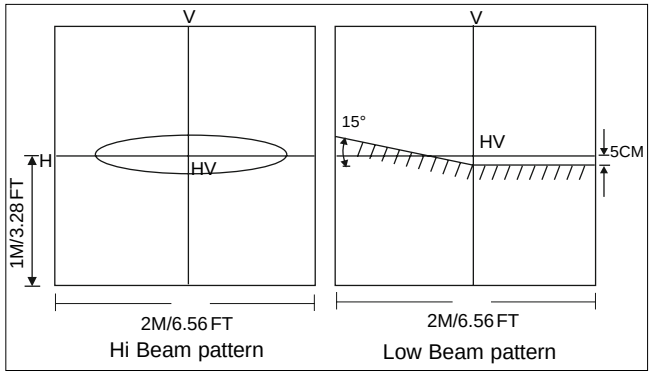
HEAD LIGHT BEAM ALIGNMENT

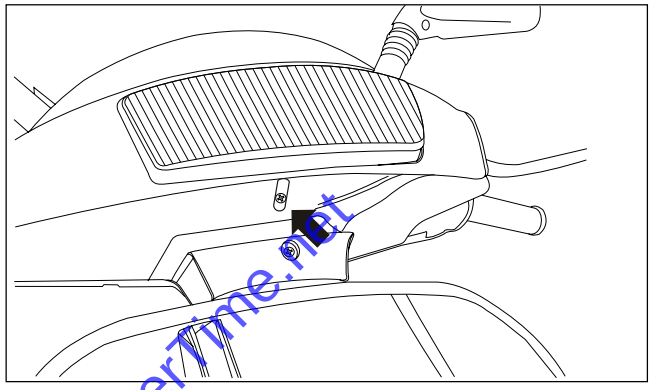
The headlight beam can be adjusted vertically and horizontally. If adjusted too low, neither low nor high beam will illuminate the road adequately. If adjusted too high, the high beam will fail to illuminate the road.

- Keep the vehicle off the stand facing a wall.
- Inflate both front and rear tyres to specified inflation pressure.
- There should be sufficient darkness.
- Keep the vehicle at a distance of 5 meter/16.4 ft from a wall as shown in figure.



- Start the vehicle. Switch ON the Headlight high beam and then lower beam.
- Check the beam pattern on the wall.
- For correct pattern of High beam & low beam, a screw is provided below Head lamp assly. Loose this screw before carrying out adjustment. Pressing Head light assly at the top shifts the pattern up and pressing Head light assly at the bottom, shifts the pattern down.
- The High beam pattern should be as shown in figure and it should be 1 meter/3.28 ft. above the ground.
- The Low beam pattern should be set 5 cm below the HV point as shown in the figure.





Screw for head lamp adjustment

STEERING :

Steering play :

If the steering is too tight, it will be difficult to turn the handlebar quickly, the vehicle may pull to one side and the steering stem bearings may become damaged. If the steering is too loose, the handlebar will vibrate and the vehicle will be unstable and difficult to steer in a straight line.

Inspection :

- Raise the front wheel off the ground.
- From the straight forward position of the handle bar slowly push the handlebar to either side.
- If the handle bar to turn by the action of gravity and continues moving until its stopper on L.H.and R.H. side, the steering is not too tight.
- If the handle bar does not begin to turn by the action of gravity, the steering is too tight necessitating adjustment.
- Squat in front of the vehicle and grasp the lower ends of the front fork. Push and pull the fork end back and forth.
- If the play is felt the steering is loose, necessitating adjustment.

Adjustment :

- Remove handle bar covers.
- Loosen Handle bar bolt & lift up slightly.
- Loosen the upper lock ring nut.
- If the steering is too tight, loosen the lock nut a fraction of turn; if the steering is too loose, tighten the locknut a fraction of turn.

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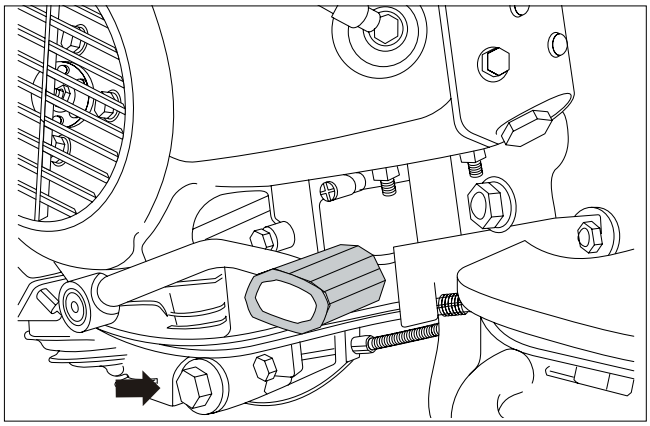
- Tighten the upper lock ring nut to a specified torque.
- Check the steering again. If the steering is still tight or loose repeat the adjustment. If the proper condition cannot be obtained inspite of correct adjustment, inspect the steering parts.
- Install handle bar covers.

OIL STRAINER CLEANING

- Oil strainer is situated in side the bolt as shown in fig.
- Remove the bolt and take out oil strainer.
- Clean it with petrol. Apply air jet to dry oil strainer and assembled back.
- Oil strainer should be cleaned in accordance with periodic maintenance chart **(i.e. at every 3000 miles.)**



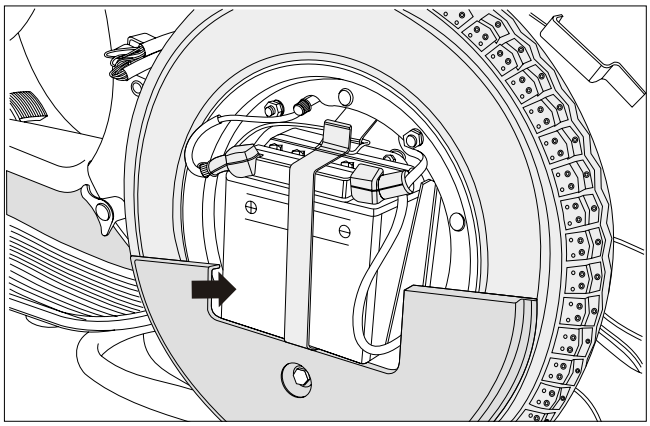
Oil strainer bolt

BATTERY MAINTENANCE

- For checking / topping up electrolyte level :
  - Remove LH bonnet.
  - Remove rubber strap holding battery and slide out battery slightly for easy topping up.
- Remove battery filler cap & fill distilled water until the electrolyte level in each cell reaches the upper level line.

CAUTION : Add only distilled water to the battery. Do not use ordinary water for topping up , it will shorten life of battery.

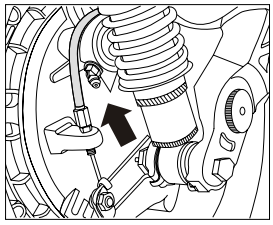
- Apply petroleum jelly to the terminals & assembled back battery on the vehicle .



Location of battery

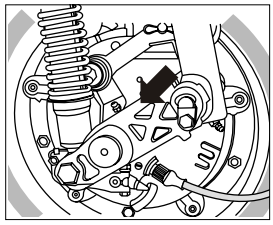
LUBRICATION OF FRONT SUSPENSION

The locations of Grease nipples and recommended intervals for lubrication of Front suspension by grease (HP multipurpose or equivalent) are as under.



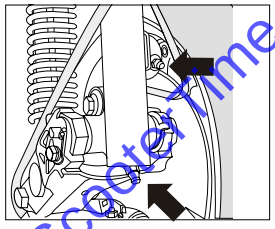
Antidive link bushes & 'O' rings.

Lubricate at Every 2000 miles.



Needle roller bearings of Front brake panel.

Lubricate at Every 4000 miles.



Bushes & 'O' rings of Antidive link & hub pin.

Lubricate at Every 2000 miles.

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NON-USE MAINTENANCE

Non-use maintenance is necessary if a vehicle remains off road for a longer duration. The correct and careful non-use maintenance carried out before storing the vehicle will prevent the vehicle from rusting and from such other non-operational damages like fire hazards.

- Clean the entire vehicle thoroughly.
- Empty the fuel from the fuel tank and carburettor float bowl (if fuel is left in for a longer time, the fuel will break and could clog the carburettor.)
- Remove the spark plug and put several drops of 2T oil into the cylinder. Kick the engine over slowly a few times to coat the cylinder wall with oil and install back the spark plug.
- Set the vehicle on a box or a stand so that both the wheels are raised off the ground.
- Spray oil on all unpainted metal surfaces to prevent rusting. Avoid getting oil on rubber parts or brake shoes.
- Lubricate the control cables.
- Cover the entire vehicle neatly. Make sure that the storage area is well ventilated and free from any source of flames or spark.
- Remove battery from vehicle.
- Maintain electrolyte level at 'Upper Level'.
- Ensure that battery is fully charged. Charge the battery once in a month.
- Keep the battery away from rain, dew, moisture & direct sunlight. Store battery in cool & dry place.

GENERAL PRECAUTIONS (Dismantling / assembly)

Before Servicing

Before starting to service a vehicle, careful reading of the applicable section is recommended to eliminate unnecessary work. Photographs, diagrams, notes, cautions, warnings, and detailed descriptions have been included wherever necessary. Nevertheless, even a detailed account has limitations, a certain amount of basic knowledge is also required for successful work.

Especially note the following:

(1) Dirt
Before removal and disassembly, clean the vehicle. Any dirt entering the engine or other parts will work as an abrasive and shorten the life of the vehicle. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) Tightening Sequence
Generally, when installing a part with several bolts, nuts, or screws, they should all be started in their holes and tightened to a snug fit. Then tighten them evenly in a cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter of turn and then remove them.

Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(3) Torque
The torque values given in this Service Manual should always be adhered to. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(4) Force
Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a wooden or plastic faced mallet. Use an impact driver for screws (particularly for the removal of screws held by a locking agent) in order to avoid damaging the screw heads.

(5) Edges
Watch for sharp edges, especially during major engine disassembly and assembly. Protect your hands with gloves or a piece of thick cloth when lifting the engine or turning it over.

(6) High Flash-point Solvent
A high flash-point solvent is recommended to reduce fire danger. Always follow manufacturer and container directions regarding the use of any solvent.

(7) Gasket, O-ring
Do not reuse a gasket or O-ring once it has been in service. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.

(8) Press
A part installed using a press or driver, such as a wheel bearing, should first be coated with oil on its outer or inner circumference so that it will go into place smoothly.

(9) Ball Bearing
When installing a ball bearing, the bearing race which is affected by friction should be pushed by a suitable driver. This prevents severe stress on the balls and races, and prevents races and balls from being dented. Press a ball bearing until it stops at the stop in the hole or on the shaft.

(l0) Oil Seal and Grease Seal
Replace any oil or grease seals that were removed with new ones, as removal generally damages seals.

When pressing in a seal which has manufacturer's marks, press it in with the marks facing out. Seals should be pressed into place using a suitable driver, which contacts evenly with the side of seal, until the face of the seal is even with the end of the hole.

(11) Seal Guide
A seal guide is required for certain oil or grease seals during installation to avoid damage to the seal lips. Before a shaft passes through a seal, apply a little oil, preferably high temperature grease on the lips to reduce rubber to metal friction.

(12) Circlip, Retaining Ring
Replace any circlips and retaining rings that were removed with new ones, as removal weakens and deforms them. When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more.

(13) Cotter Pin
Replace any cotter pins that were removed with new ones, as removal deforms and breaks them.

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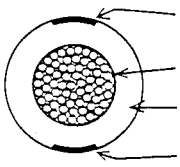
(14) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the rubbing surfaces have an adequate lubricative film. During assembly, oil or grease (whichever is more suitable) should be applied to any rubbing surface which has lost its lubricative film. Old grease and dirty oil should be cleaned off. Deteriorated grease has lost its lubricative quality and may contain abrasive foreign particles.

Don't use just any oil or grease. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended. This manual makes reference to molybdenum disulfide grease (MoS_2) in the assembly of certain engine and chassis parts. Always check manufacturer recommendations before using such special lubricants.

(15) Electrical Wires

All the electrical wires are either single-colour or two-colour and, with only a few exceptions, must be connected to wires of the same colour. On any of the two-colour wires there is a greater amount of one colour and a lesser amount of a second colour, so a two-colour wire is identified by first the primary colour and then the secondary colour. For example, a yellow wire with thin red stripes is referred to as a "yellow/red" wire; it would be a ''red/yellow" wire if the colours were reversed to make red the main colour.

Wire (cross-section)	Name of Wire Color
	Yellow/red

(16) Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed. These replacement parts will be damaged or lost their original function once removed.

(17) Inspection

When parts have been disassembled, visually inspect these parts for the following conditions or other damage If there is any doubt as to the condition of them, replace them with new ones.

Abrasion	Crack
Hardening	Warp
Bent	Dent
Scratch	Wear
Colour change	Deterioration
Seizure	

(18) Service Data

Numbers of service data in this text have following meanings:

"Standards" : Show dimensions or performances which brand-new parts or systems have.

"Service limits": Indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

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TIGHTENING TORQUES

ENGINE

SR. NO.	PART NAME	TORQUE - Kgm.
	NUTS FOR :	
1	Crankcase to Crankcase (Qty. 5)	1.5 to 1.8
2	Gear shifter housing (Qty. 2)	1.3 to 1.5
3	Cylinder Head (Qty. 4)	2.0 to 2.2
4	Crankshaft clutch side (Gear primary spur)	9.0 to 9.5
5	Crankshaft magneto side (Rotor nut)	5.5 to 6.0
6	Intermediate shaft (For clutch assly)	9.0 to 9.5
7	Tappet	0.8 to 1.0
8	Main shaft	5.0 to 5.5
9	Cover to Crankcase	1.3 to 1.5
10	Silencer to Cylinder head	2.0 to 2.5
11	Crankcase to Crankcase (Qty. 2)	1.3 to 1.5
12	Kick lever	2.0 to 2.5
	BOLTS FOR :	
13	Cylinder head to Cylinder Block (Qty. 2)	0.9 to 1.1
14	Silencer to Crankcase (Qty.1)	3.0 to 3.5
15	Cam shaft sprocket	1.1 to 1.3
16	Cam chain tensioner adjuster	0.8 to 1.0
17	Manifold to Cylinder head	0.6 to 0.8
18	Chain tensioner body	0.6 to 0.8
19	Cover to Crankcase	1.3 to 1.5
20	Oil drain bolt	2.6 to 3.0
	SCREWS FOR :	
21	Stator plate	0.6 to 0.8
22	Screw for oil tube assly	0.3 to 0.4
23	Stopper plate (Cylinder head)	0.6 to 0.8
24	Gear shifter cover	0.6 to 0.8
25	Guide kick (Qty. 2)	0.6 to 0.8
	GENERAL :	
26	Spark plug	2.5 to 3.0
27	Cap (Cylinder head)	0.8 to 1.0
28	Oil plug	2.6 to 3.0

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TIGHTENING TORQUES

CHASSIS

SR. NO.	PART NAME	TORQUE - Kgm.
	NUTS FOR :	
1	Front shock absorber	3.0 to 3.5
2	Fuel cock assly on Fuel tank	3.0
3	Engine link mounting on chassis	3.0 to 4.0
4	Engine mounting on link	3.5 to 4.0
5	Pivot securing wheel hub	5.0 to 5.5
6	Wheel assly on brake drum (Qty. 5)	2.0 to 2.7
	BOLTS FOR :	
7	Handle bar mounting	3.2 to 3.8
8	Rear shock absorber to engine	2.0 to 2.3
9	Front mudguard	0.25 to 0.3
10	Stand	0.4 to 0.5
	STEERING :	
11	Upper bearing race	0.6 to 0.7
12	Ring nut	5.0 to 6.0

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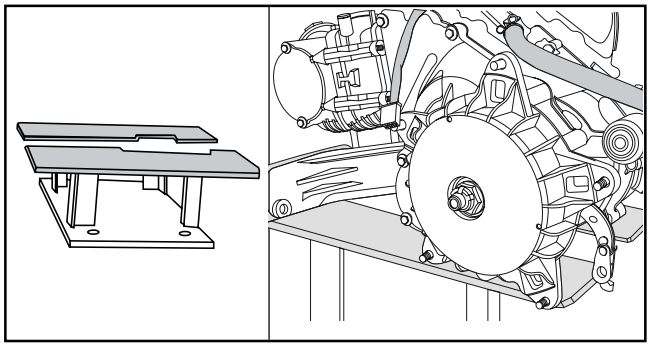
SPECIAL TOOLS

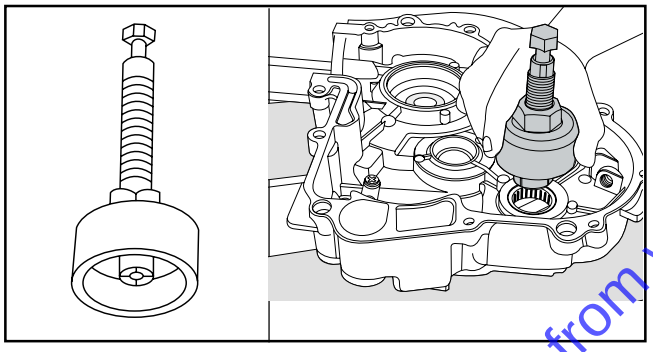
The special tools recommended for carrying out repairs / overhauls are illustrated below. These tools are designed to facilitate quick and safe repairs. Use of these special tools is recommended to carry out repairs efficiently and for avoiding costly mistakes such as damages to parts, injuries etc. The following list contains for each tool the description, tool application and an illustrative sketch.

1. 37-0030-01 : Engine support stand



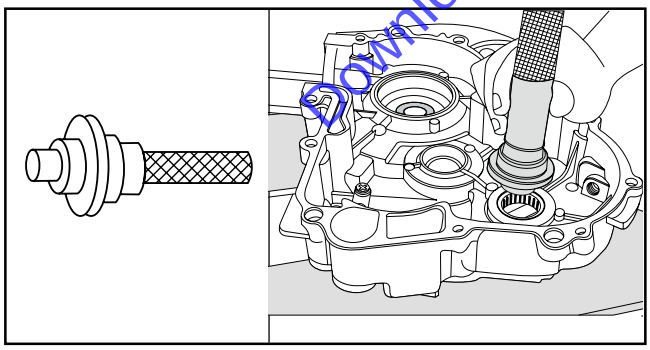
For supporting engine, crankcase while assembly / dismantling.

2. 37-1003-02 : Extracter



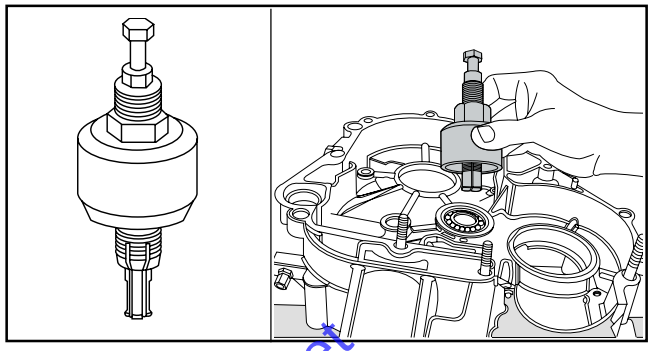
Extractor for needle bearing in crankcase magneto side.

3. 37-1005-04 : Bearing Driver



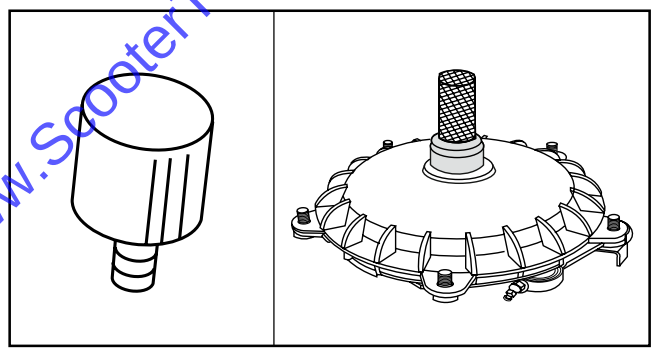
Driver for fitting needle bearing in crankcase magneto side.

4. 37-1014-10 : Extractor for input shaft bearing.



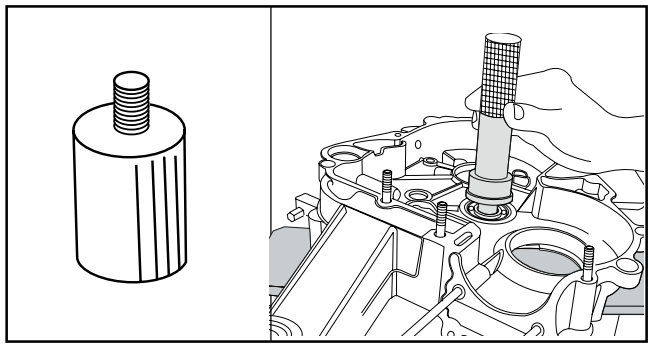
To be used for removing input shaft bearing from crankcase clutch side.

5. 37-1014-13 : Inner driver



To be used with holder and outer bearing driver for installing front brake drum bearing.

6. 37-1014-14 : Inner driver



To be used with holder & outer bearing driver for installing input shaft bearing in crankcase (clutch side) & needle bearings in front brake drum.

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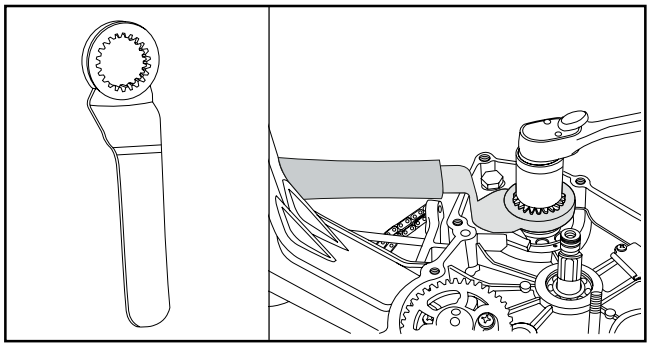
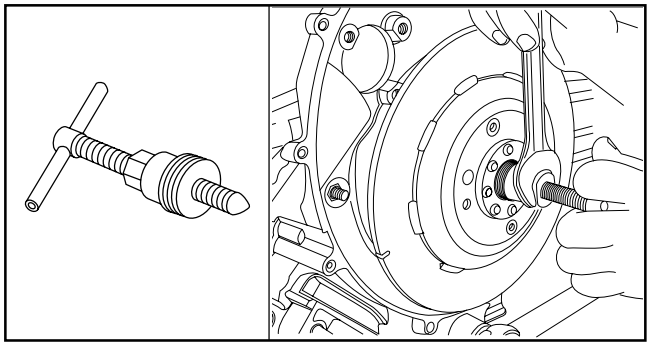
7. 37-1028-32 : Spur gear holder



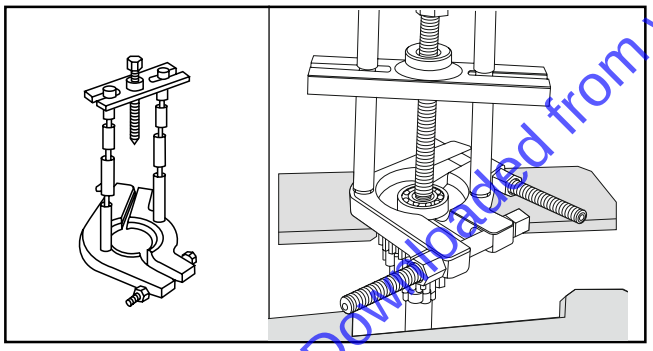
Tool for holding primary gear while removing nut.

8. 37-1030-34 : Rotor puller



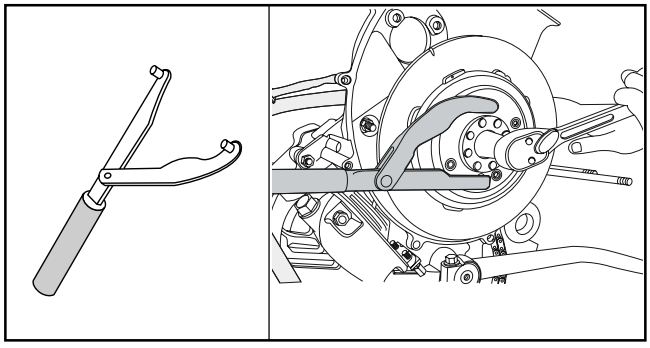
For pulling magneto rotor from crankshaft.

9. 37-1030-48 : Bearing puller



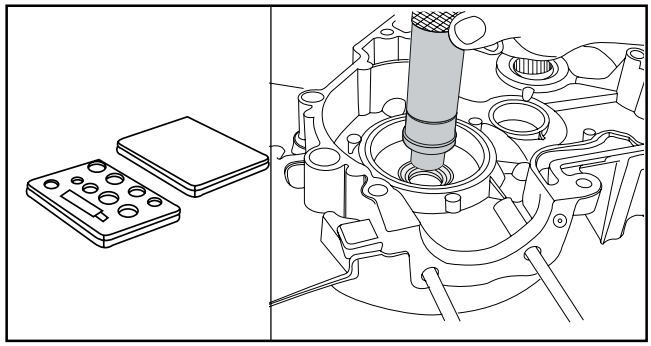
Bearing puller for extracting bearing from input shaft.

10. 37-1030-54 : Magneto rotor holder



For holding the magneto rotor stationary while loosening or tightening the rotor nut.

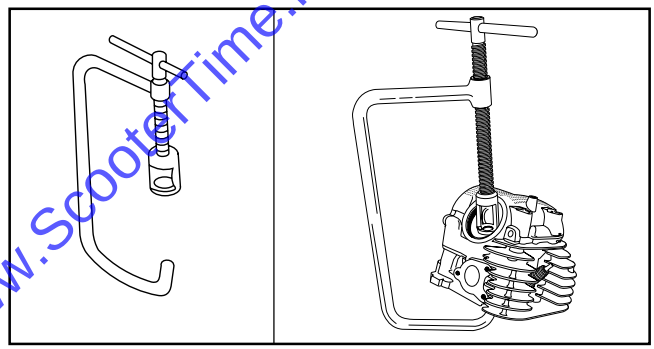
11. 37-1030-61 : Bearing driver set



Inner Driver f 20 - used with Bearing Driver set for installing main shaft bearing & magneto side oil seal.

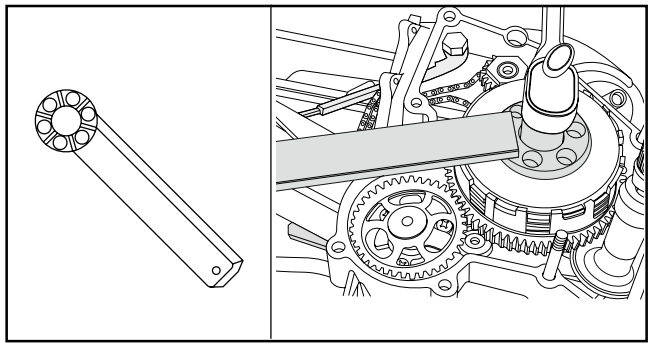
Inner Driver f 25 - used with Bearing Driver set for installing main shaft oil seal

12. 37-1031-07 & 37-1031-08 : Valve spring compressor assembly with adopter.



Used for taking out inlet & exhaust valves by compressing valve spring in cylinder head.

13. 37-1031-52 : Clutch holder.



Used for hold the clutch housing stationary while loosening & tightening the clutch hub nut.

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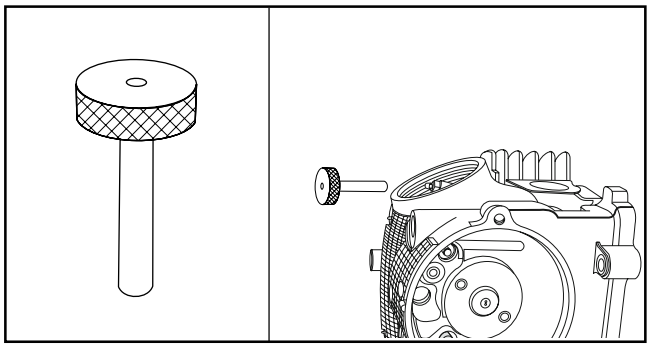
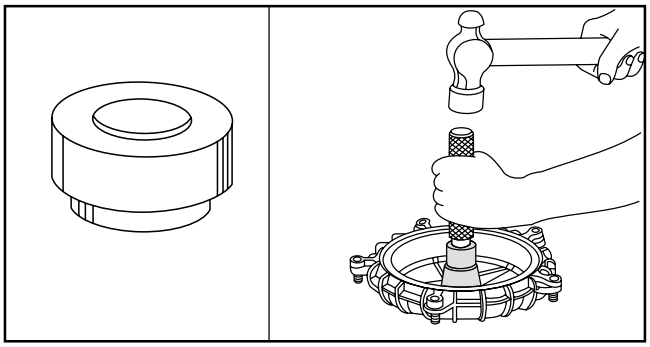
14. 37-1031-53 : Valve adjusting screw driver



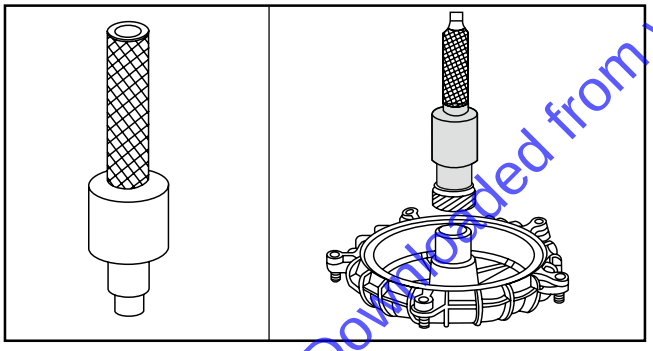
Used for holding screw while adjusting valve clearance.

15. 37-1519-03 : Bearing driver



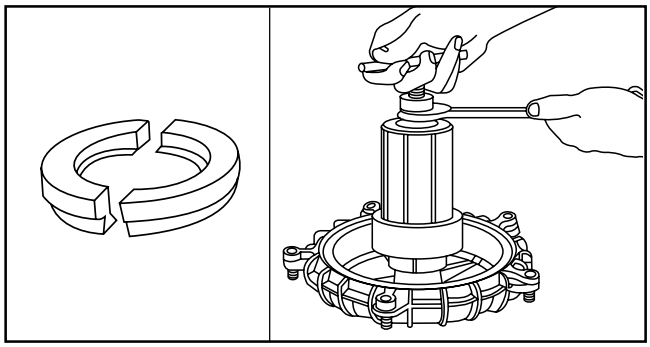
To be used with bearing driver set (37-1030-61) for assembling needle roller bearing in front brake drum.

16. 37-1519-04 : Driver



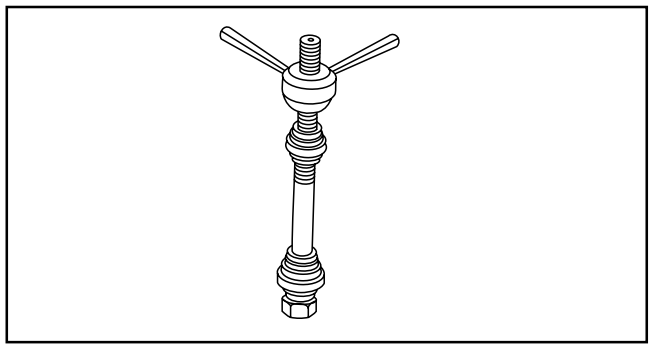
For assembling speedometer gear & spacer in front wheel brake drum.

17. 37-1519-05 : Adopter



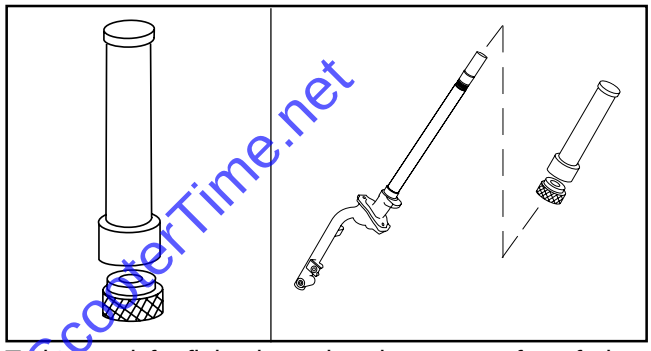
For removing speedometer gear & spacer from front wheel brake drum.(To be used with 37-1001-14)

18. 37-1801-06 : Bearing races assembly tool



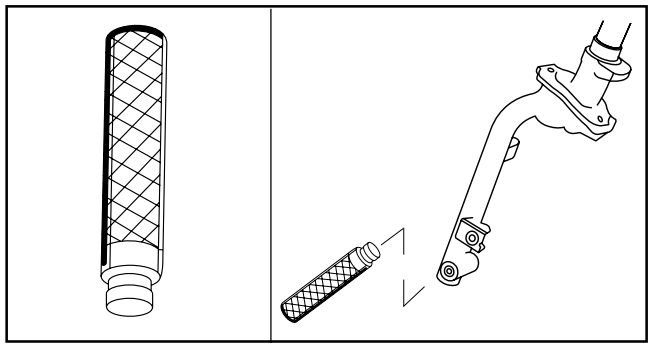
To be used for installing the upper and lower bearing race on chassis tube.

19. 37-1805-08 : Bearing driver for fork assembly



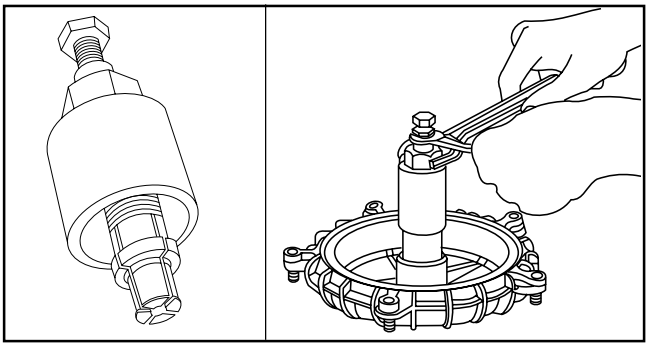
To be used for fitting lower bearing race on front fork tube.

20. 37-1819-03 : Bearing driver



Tool for assembling needle roller bearings in steering column.(To be used alongwith 37-1014-14)

21. 37-1819-04 : Bearing extracter



Tool for removing needle roller bearings from steering column.

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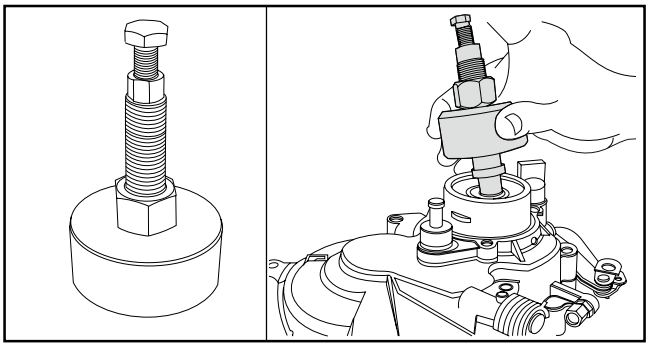
22. 37-10BA-56 : Bearing extractor



To remove main shaft ball bearing from crankcase cover.

23. 37-1030-79 : Crankshaft alignment fixture

To be used for mounting crankshaft while checking its run out.

24. 67-7505-51 : Compression Tester

To be used for checking compression pressure in the cylinder.

25. 37-1030-63 : Hand tester

For checking electrical components. Refer Electrical Maintenance.

26. 69-7505-26 & 69-7505-28 : Torque wrenches

To be used for tightening fasteners to specified torque.

27. 37-2031-02 : Battery charger (12T6 - 12V)
For charging battery.

28. 67-1691-69 : Hydrometer
For checking specific gravity of electrolyte.

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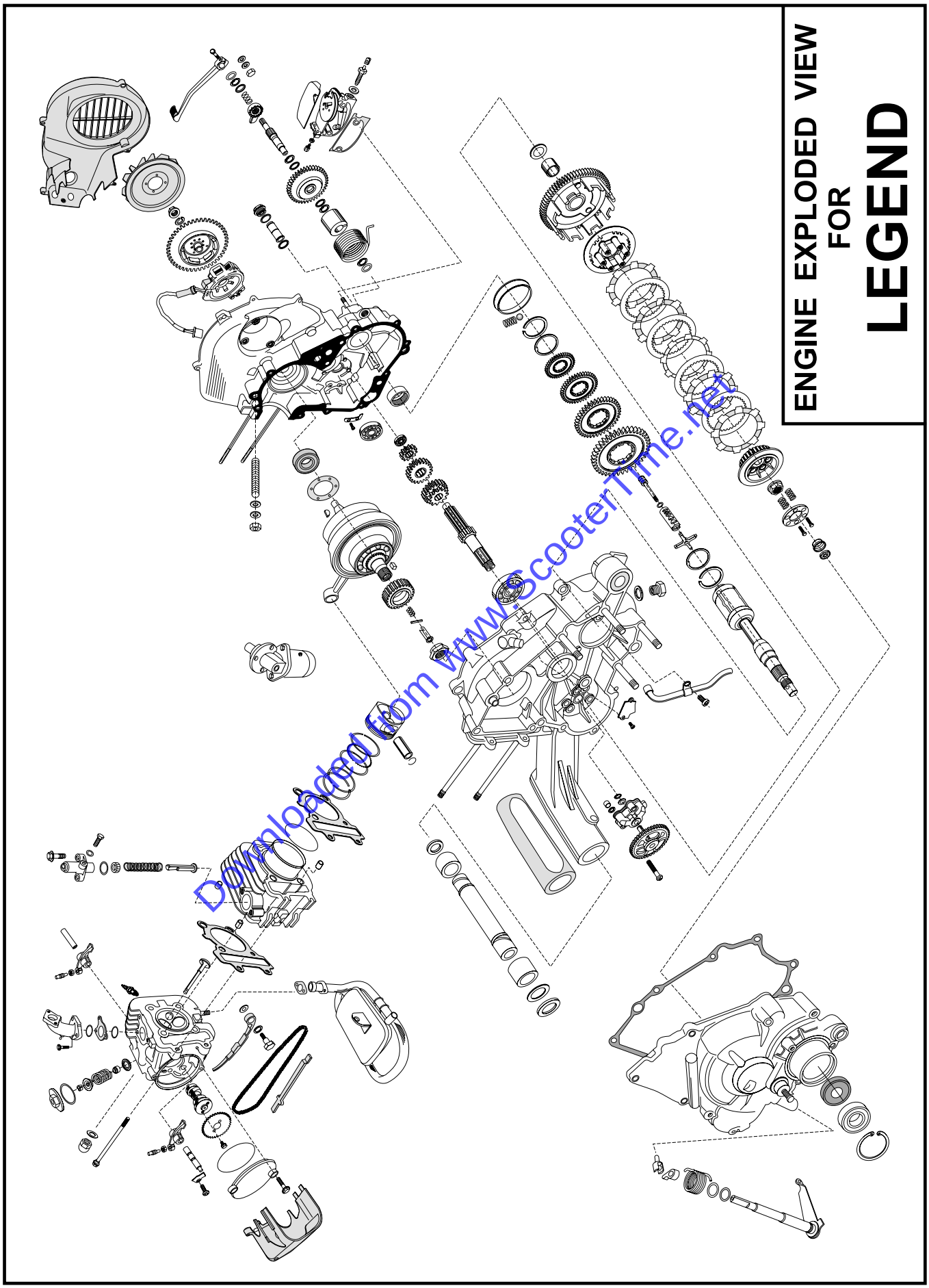

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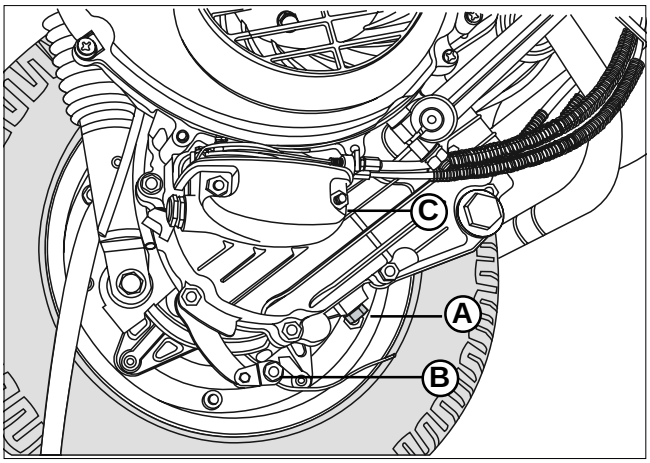
ENGINE DISMANTLING

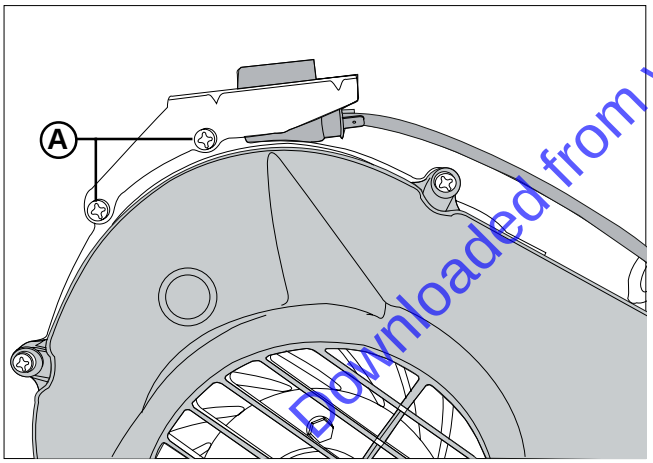
REMOVAL OF ENGINE FROM VEHICLE :

- Remove both LH and RH bonnets.
- Drain Engine oil completely by removing drain plug.



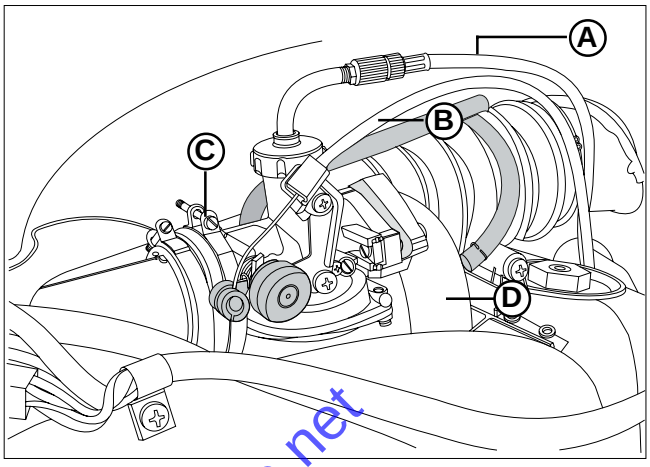
A) Drain Plug **B) Nut for rear brake cable**
C) Nut for gear shifter assly.

- Disconnect lower ends of rear brake & clutch cable.
- Remove gear shifter cover and release lower ends of gear cables by unscrewing screw terminals.
- Remove H.T. Coil by removing 2 screws on crankcase side.

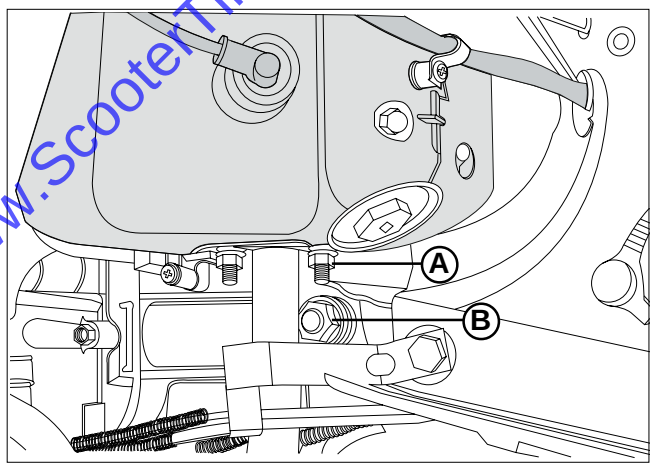


A) Screws for removal of H.T. coil

- Disconnect magneto harness coupler from main harness.
- Disconnect choke and throttle cable from carburettor.
- Disconnect duct from carburettor. Disconnect carburettor from intake manifold. Disconnect fuel pipe and sensing pipe.
- Remove silencer by removing 2 nuts at the exhaust port of cylinder block and 1 bolt on crankcase arm.
- Remove bolt fixing lower end of rear shock absorber to the engine.
- Hold engine carefully and then remove the bolt fixing crankcase arm with engine mounting link on chassis.
- Hold engine carefully & remove the bolt fixing c,case arm with engine mounting link on chassis.
- Take out the engine carefully from the chassis.
- Take out rear wheel and mount the engine on support stand P.No. 37 1030 01.



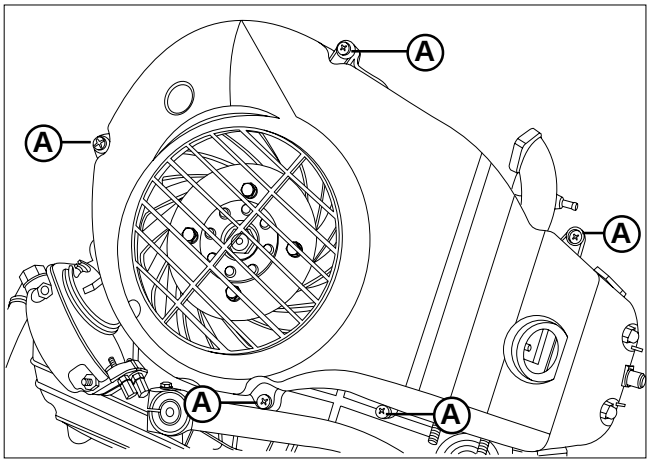
A) Throttle cable **B) Choke cable**
C) Screw for Duct **D) Intake manifold**



A) Nut for silencer
B) Nut for mounting engine on link

ENGINE DISMANTLING :

- Mount the engine on support stand .
- Remove fan cover and cowling.



A) Screws for removal of cowling

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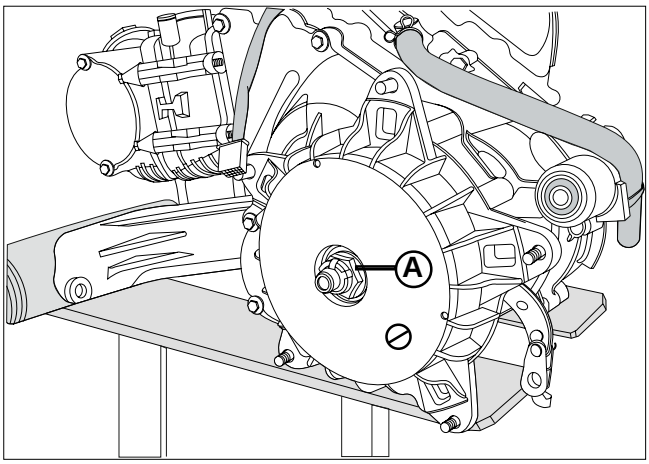
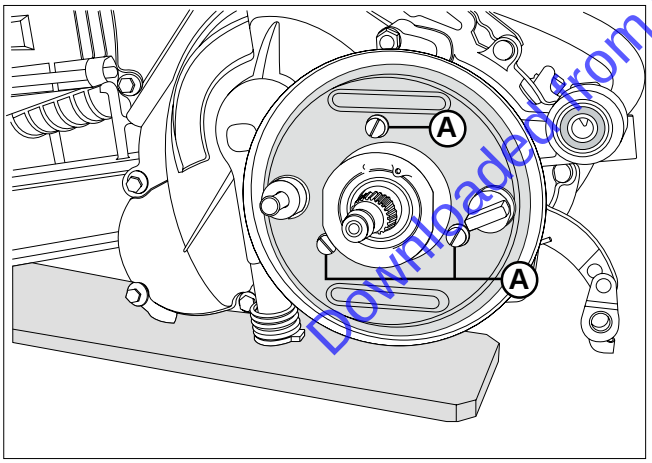
- Remove rear brake drum by following method :-
  - Straighten bent edges of split pin and pull it out with the help of plier. Remove the cap.
  - Remove castle nut and washer.
  - Pull out the brake drum.



A) Castle nut for removal of Rear brake drum.

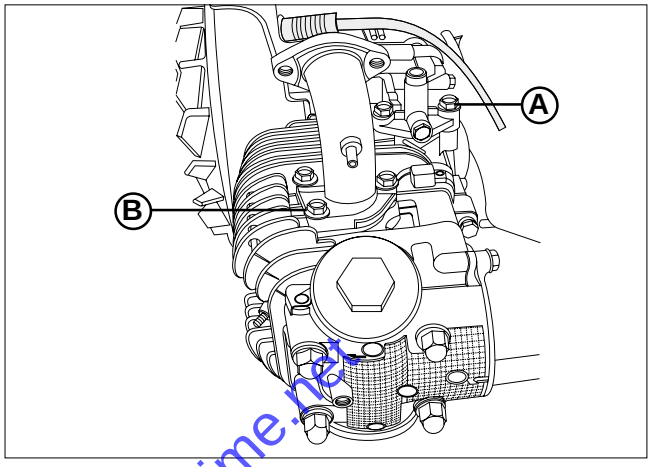
- Removal of Rear brake drum back plate -
  - Hold the brake shoes with a clean cloth to protect the linings from grease and dirt. Lift the outer portion of brake shoes, turn them upward and remove them.
  - Remove the springs to separate the two shoes.
  - Remove back plate by removing 3 screws with spring washers.
  - Remove 2 'O' rings & gasket on c'case cover.



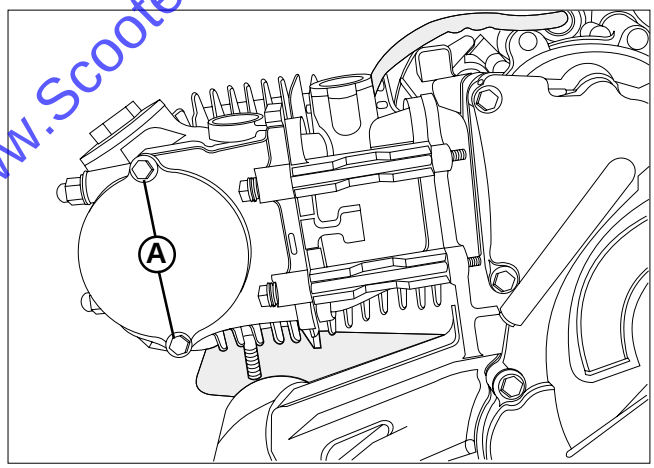
A) Screws for Removal of back plate

CYLINDER HEAD REMOVAL :

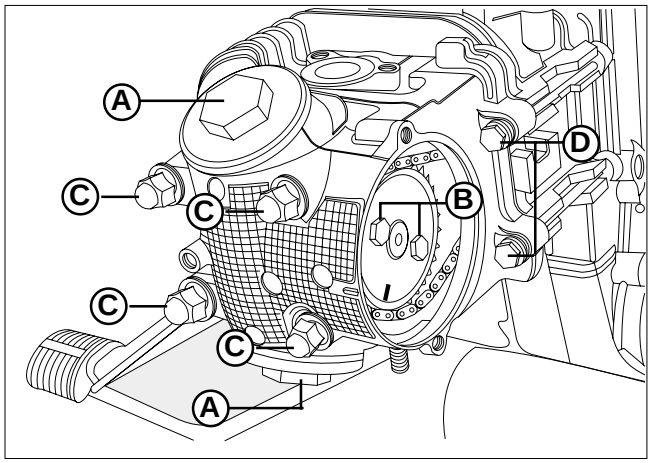
- Take out spark plug cap and spark plug.
- Remove cam chain tensioner by removing 2 bolts fitted on cylinder block.
- Remove intake manifold by removing 3 bolts fitted on cylinder head.
- Remove OHC cover by removing 2 flanged bolts.
- Remove both the caps of valves by using 24 mm spanner.
- Rotate magneto assembly and ensure piston is at TDC and both tappets are free.
- Remove 2 flanged bolts fixing timing chain sprocket on camshaft. Slide out timing chain from sprocket and take out sprocket.
- Remove 4 nuts and 2 bolts mounting cylinder head on crankcase alongwith 4 special washers.
- Remove cylinder head.
- Take out lower guide chain (slack) from cylinder block.



A) Bolts for cam chain tensioner assly.
B) Bolts for intake manifold assly.



A) Bolts for OCH cover.



A) Cap for valve B) Bolts for timing chain sprocket
C) Nuts for cylinder head D) Bolts for cylinder head

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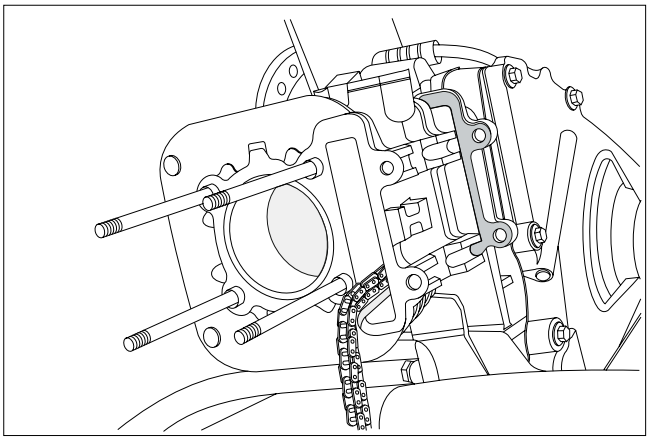
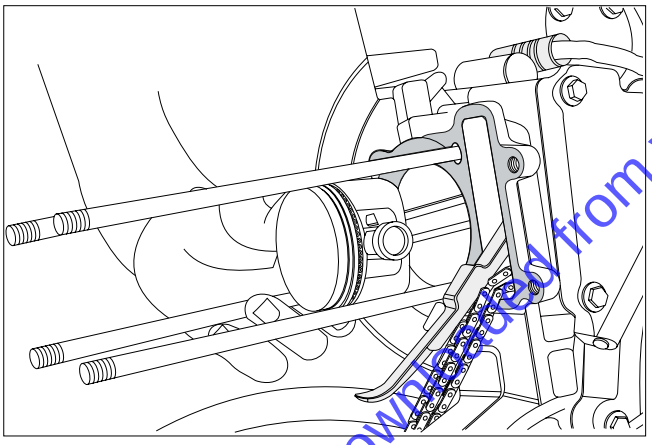
CYLINDER BLOCK PISTON REMOVAL :

- Take out cylinder head as explained above.
- Remove the cylinder head gasket and dowel pins.
- Pry up the cylinder with a suitable tool to free the cylinder from crankcase.
- Lift the cylinder off and guide the cam chain through the tunnel in the cylinder.
- Take out cylinder along with oil seal from piston.



Removal of cylinder head

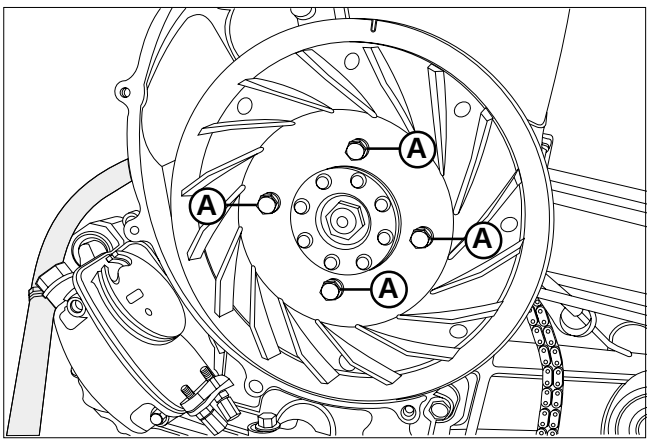
- Remove one of the piston pin snap rings.
- Push out the piston pin and remove the piston.



Removal of piston assly.

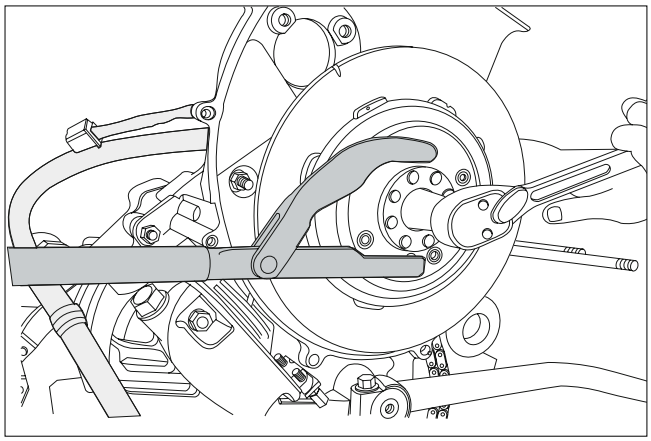
MAGNETO ASSEMBLY DISMANTLING :

- Remove 4 bolts mounting fan on rotor.



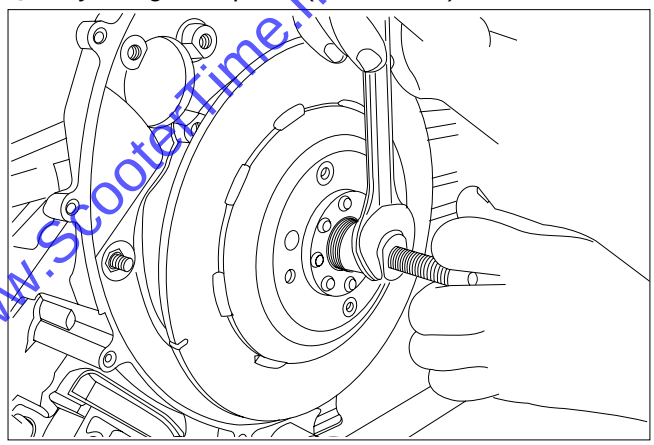
A) Fan mounting bolts.

- Remove rotor nut by holding rotor with the help of rotor holder (37 1030 54).



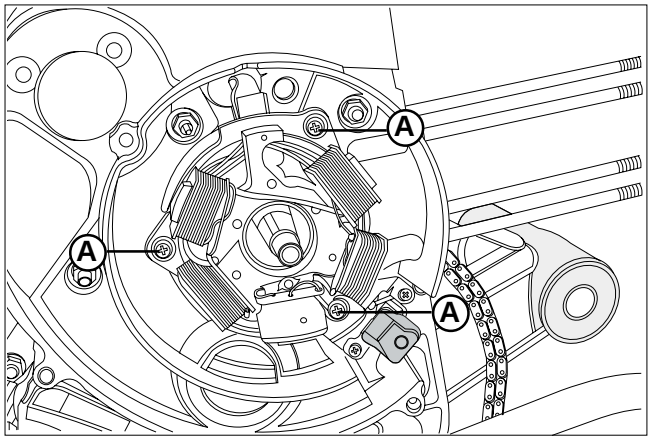
Removal of nut for magneto rotor

- Remove nut alongwith spring washer.
- By using rotor puller (37 1030 34) take out rotor.



Removal of magneto rotor

- Take out stator plate assembly by removing screws.



A) Stator plate assly. mounting screws

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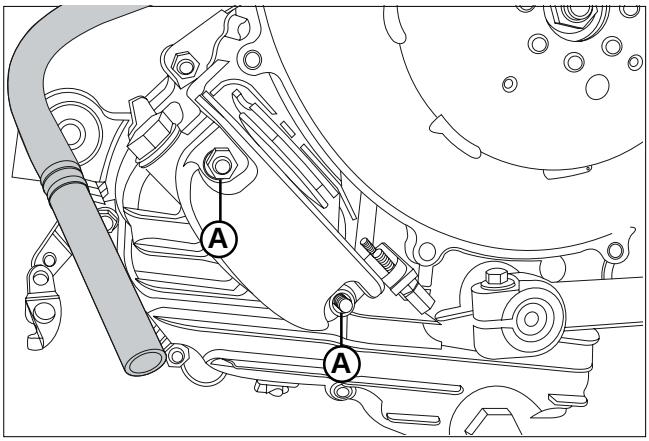
GEAR SHIFTER REMOVAL :

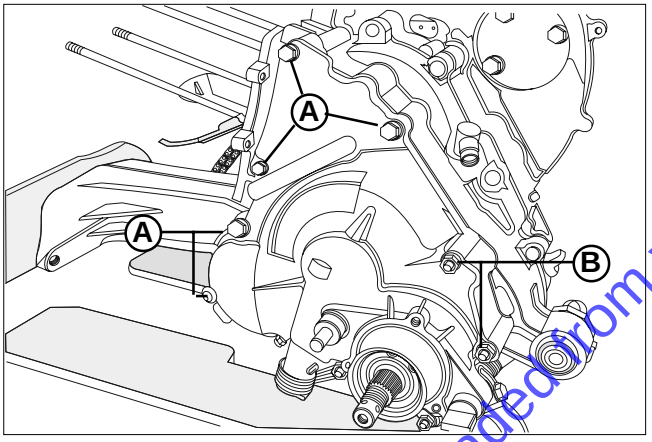
- Remove 2 nuts mounting gear shifter on crankcase.
- Engage 4th gear & pull out gear shifter complete.



Nuts for gear shifter assly.

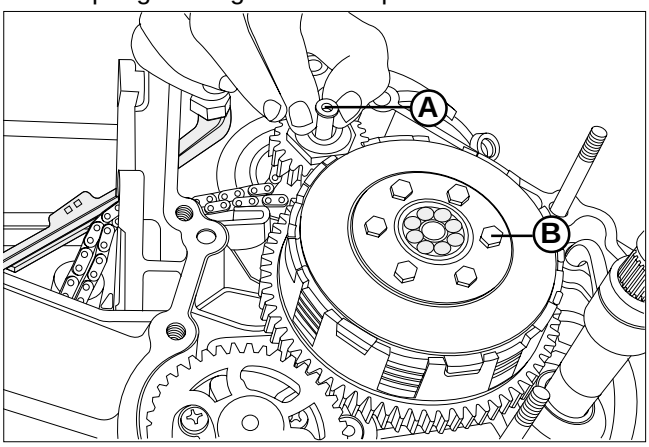
REMOVAL OF CLUTCH COVER (C'CASE COVER):

- Loosen 6 flanged bolts and remove them.
- Remove 4 nuts alongwith plain and spring washers.



A) Bolts ,B) Nuts for mounting clutch cover

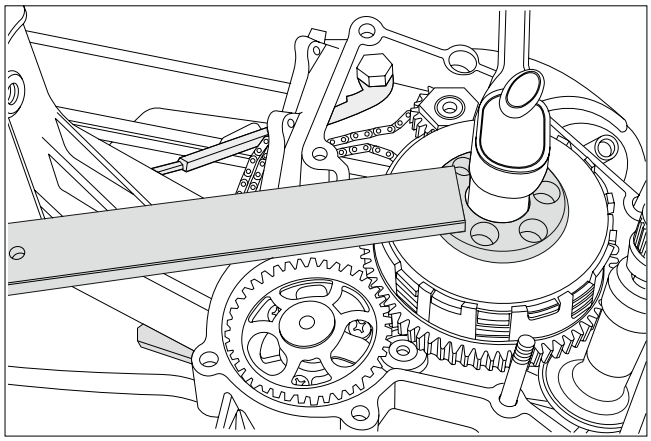
- Take out clutch cover by tapping the cover gently using Nylon mallet. Remove two dowel pins.
- Remove plunger oil from the crankshaft .
- Remove clutch release bearing & bearing seat.
- Remove the 6 bolts of clutch and take out 6 springs alongwith holder plate.



Removal of plunger (A) **B) Bolts for holder**

- Hold the wheel clutch with the help of clutch holder (37 1031 52). Remove clutch hub nut.

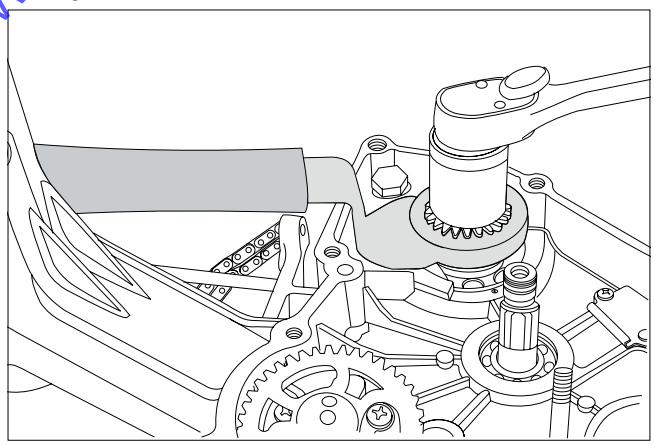
NOTE : HUB NUT HAS LEFT HAND THREADING .



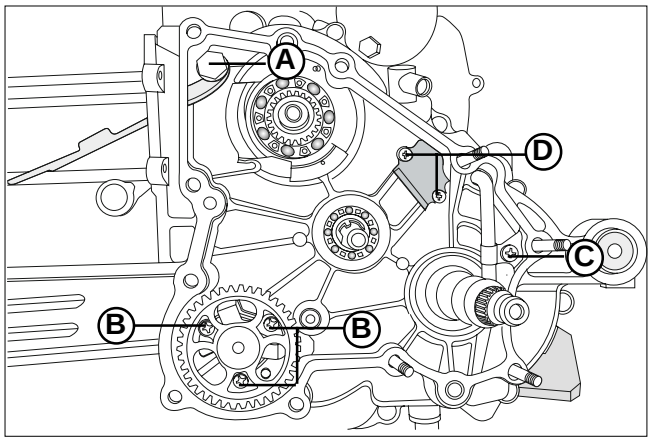
Clutch holder

- Remove housing complete clutch alongwith wheel clutch.
- Store housing complete clutch, collar, spacer carefully.
- Hold primary spur gear with the help of special tool (37 1028 17) and remove the special nut.
- Take out primary spur gear alongwith the key. Take out parallel pin and spring from the crankshaft.

NOTE : Removal of special nut for primary spur gear is required only if primary gear or crankshaft is to be replaced.



Removal of primary spur gear



A) Bolt for guide chain **B) Screws for oil pump**
C) Screws for oil tube **D) Screws for baffle**

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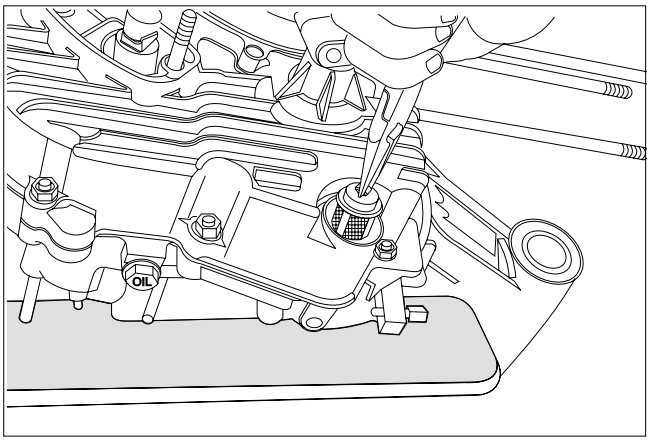
- Remove guide chain (tension) by removing the special bolt.
- Take out timing chain.
- Remove oil pump assembly by removing 3 screws. Take out dowel pin and two 'O' rings carefully and store them alongwith oil pump.
- Take out screw pan cross and take out oil tube alongwith oil seal.
- Take out baffle by removing 2 screws.

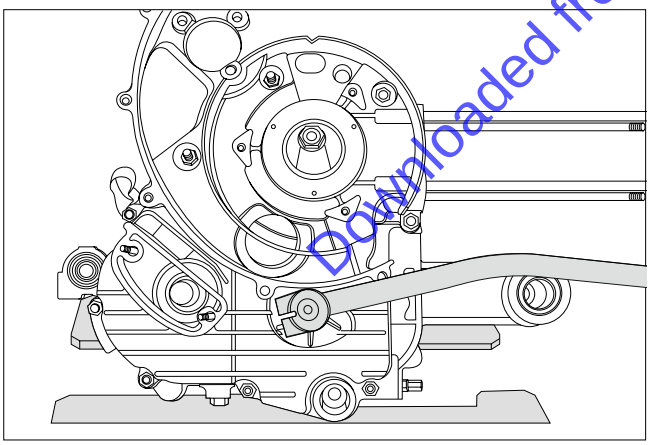
SPLITING OF CRANKCASE HALVES :

- Take out oil strainer cap bolt alongwith oil strainer mesh.



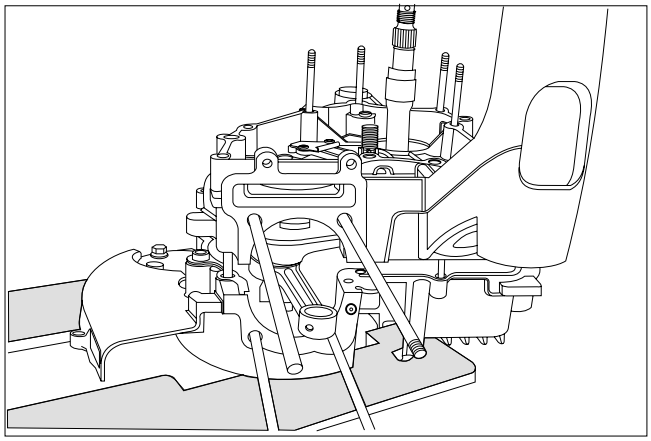
Removal of oil strainer

- Loosen all the 10 nuts fixing crankcase clutch and magneto side together.
- Remove the nuts and take out bolts, plain & spring washers and store them properly.

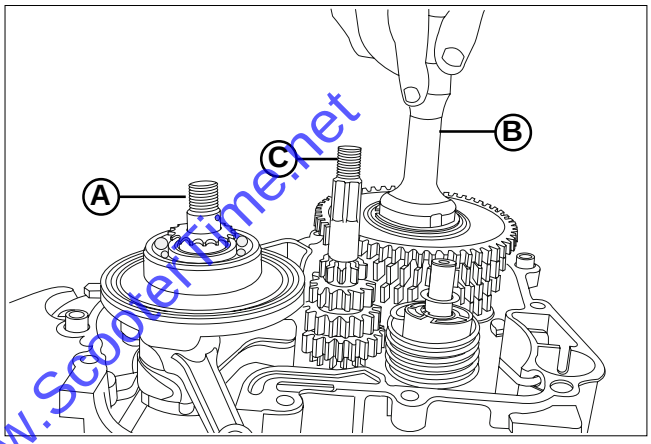


Crankcase joining nuts

- Gently tap the crankcase magneto side with the help of nylon mallet and take out.
- Remove crankshaft assembly alongwith float control rubber ring.
- Take out mainshaft assembly.
- Remove intermediate shaft by tapping gently from crankcase cover side.



Spliting of crankcase halves

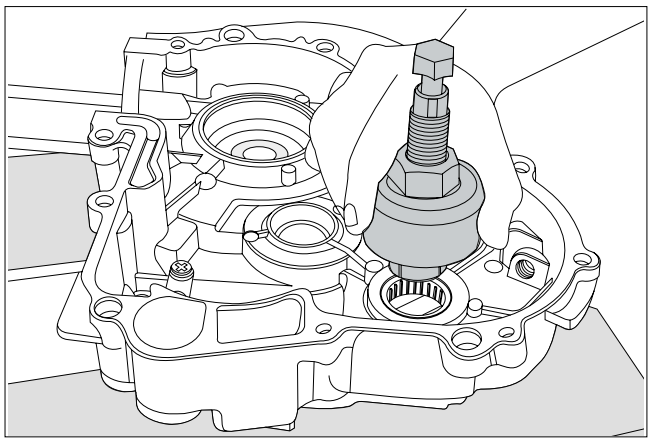


A) Crankshaft assly. B) Mainshaft assly.
C) Intermediate shaft assly.

DISMANTLING OF SUB-ASSEMBLIES :-

Crankcase Magneto Side :

- Remove 'D' bolt and nut alongwith plain & spring washer for kick starter lever.
- Tap the kick shaft assembly lightly to take it out from crankcase.
- Remove 'O' ring from kick shaft from crankcase.
- Take out needle roller bearing for main shaft by using special tool P. No. 37 1003 02.



Removal of needle roller bearing

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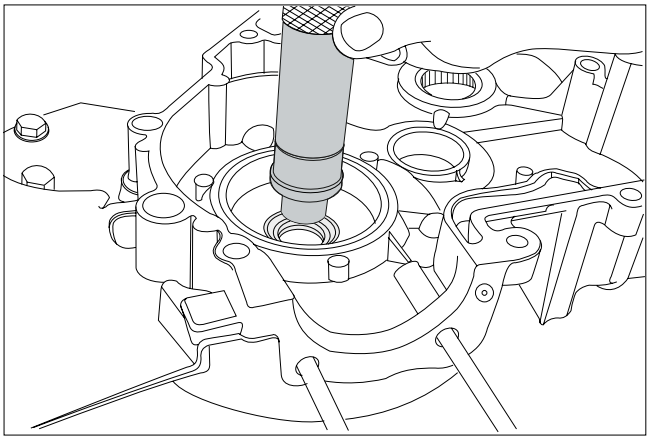
- Take out oil seal for crankshaft magneto side.

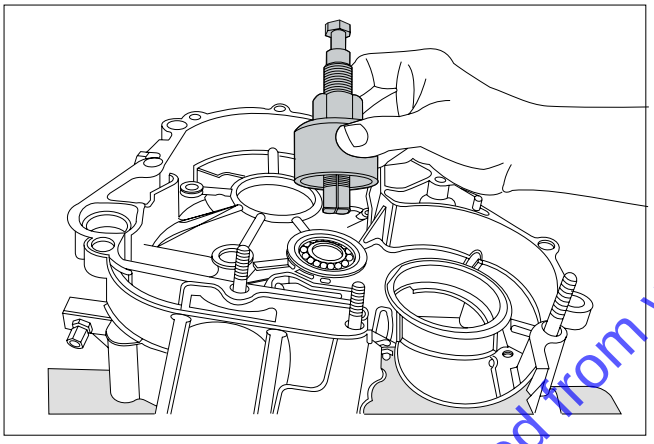


Removal of crankshaft magneto side oil seal

- Take out guide kick by removing 2 screws.

Crankcase Clutch Side :

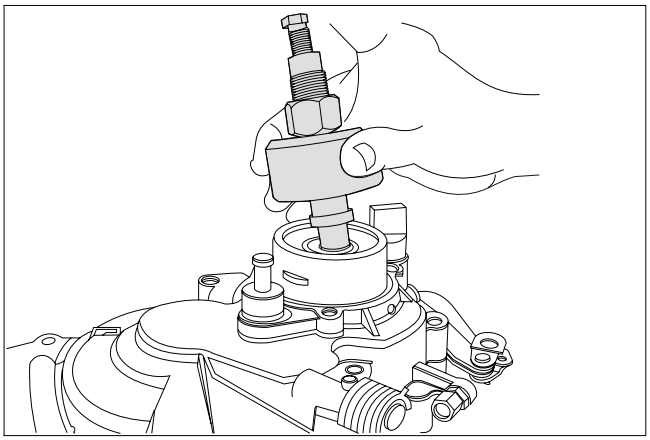
- Remove ball bearing from crankcase clutch side.



Removal of ball bearing

Crankcase Cover (Clutch cover) :

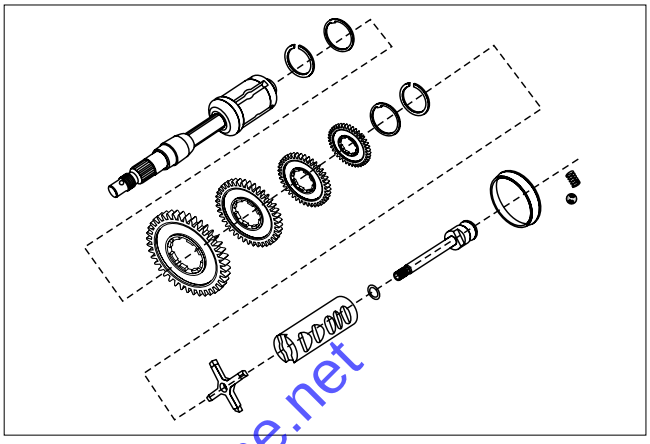
- Remove circlip for mainshaft bearing by using circlip plier.
- Remove ball bearing for mainshaft by using extractor P. No. 37 10BA 56.



Removal of ball bearing for mainshaft

- Remove oil seal for mainshaft.
- Remove the plunger.
- Remove the spring for clutch spindle assembly.
- Take out clutch spindle assembly alongwith internal lever and plain washer.
- Remove 'O' ring.

Main Shaft :

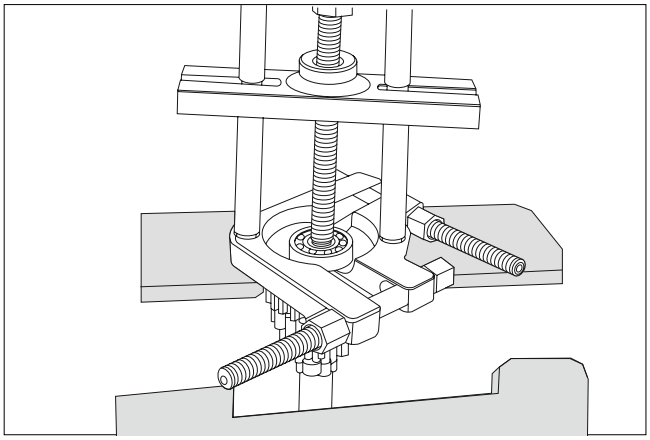


Mainshaft assly. dismantling

- Push the cup slightly towards the gear wheels.
- Press both the springs for gear selector against the gear selector with the help of a thin plate or hacksaw blade and lift out the cup from mainshaft. Take out 2 springs & balls carefully.
- Take out circlip alongwith shoulder ring.
- Take out gear wheels one by one.
- Take out shoulder washer and circlip.
- Remove stem after unlocking the lock washer **NOTE : STEM HAS LEFT HAND THREADING .**
- Take out gear selector.
- Remove cross from mainshaft.

Intermediate Shaft Assembly :

- Remove the bearing from the shaft by using special tool P.No. 37 1030 48.



Removal of bearing

- Remove kick driven gear.
- Remove 4th driver gear.
- Remove cluster gear.

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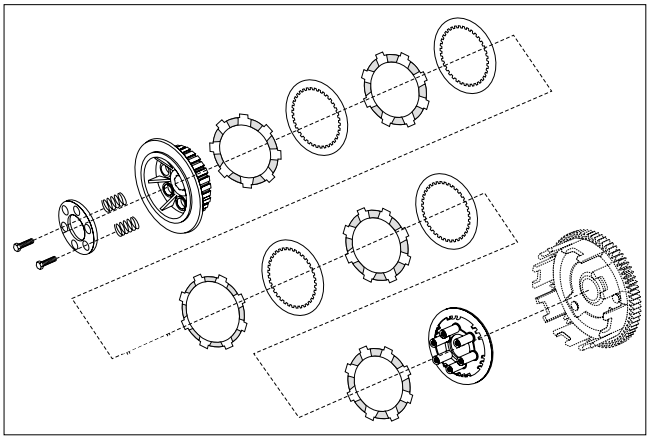
Clutch Dismantling :

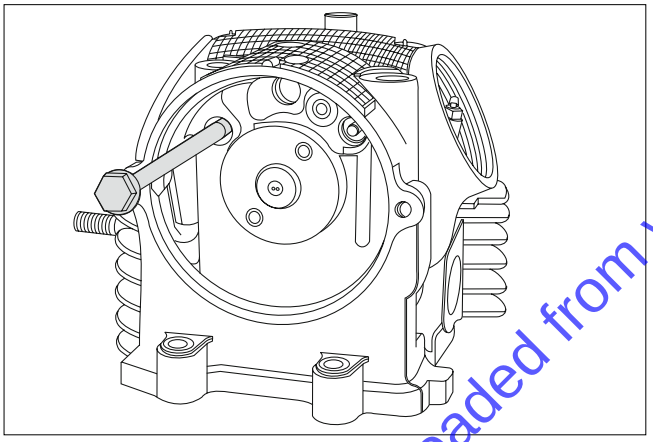
- Take out hub clutch.
- Take out plate friction and plate clutch one by one.



Clutch dismantling

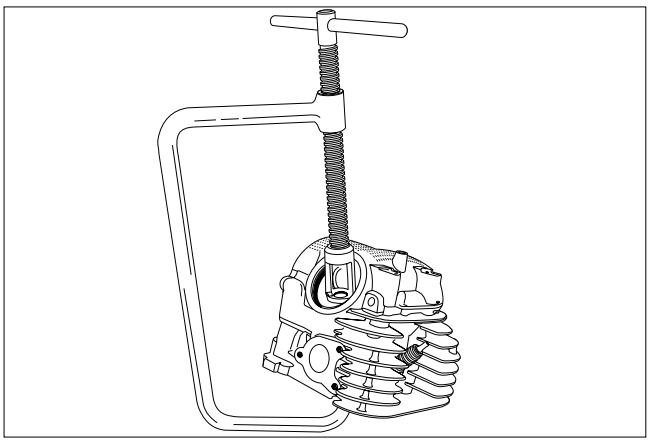
Cylinder Head :

- Remove stopper plate by removing screw .
- Take out inlet rocker arm shaft by using a bolt.
- Take out exhaust rocker arm shaft by nose plier.



Removal of rocker arm shaft

- Take out both the rocker arms.
- Take out camshaft.
- Using valve spring compressor and adaptor press down the valve spring retainer.
- Remove the collets.

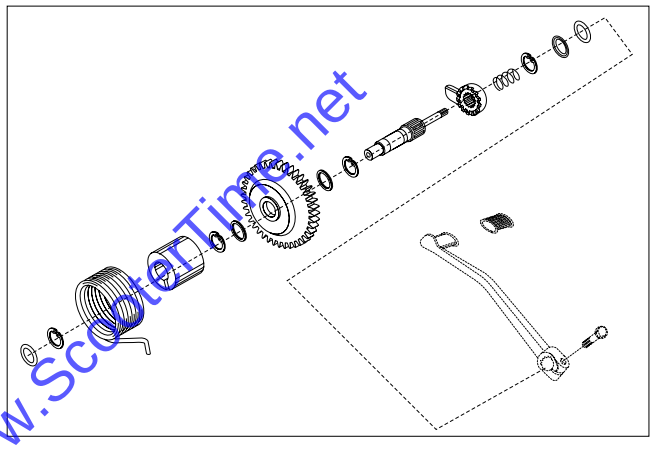


Removal of valve

- Loosen valve spring compressor and take out valve spring retainer, valve spring and spring seat.
- Push out one valve.
- Repeat same procedure for the other valve.

Kick Shaft Dismantling :

- Remove circlip holding the spring guide.
- Remove spring guide by nose plier.
- Remove spring by taking it out from the hole provided on the kick shaft.
- Remove the circlip alongwith the washer.
- Take out gear kick alongwith washer on other side of gear. Remove circlip and take out ratchet gear.
- Remove spring coil and cup kick shaft.
- Remove circlip.



Kick Shaft Dismantling

ENGINE ASSEMBLY

REASSEMBLING OF SUB-ASSEMBLIES :

Kick Shaft Assembly :

- Fix circlip for the gear kick on kick shaft and assemble washer on it.
- Assemble gear kick on kick shaft.
- Put one washer on gear kick & fix circlip on it.
- Assemble ratchet gear on the serrations of kick shaft in such a way that the dot mark punched on the beginning of serrations on kick shaft matches with the dot mark on the ratchet gear.
- Fix coil spring on shaft and put cup kick shaft.
- Fix circlip over the cup kick shaft.
- Assemble kick return spring on the shaft in such a way that hook on inner diameter of spring is located in hole on kick shaft.
- Put nylon spring guide on the kick shaft and fix circlip.

Cylinder Head Assembly :

- Smear slight amount of grease on valve.
- Push inlet valve into the valve guide from combustion chamber side.
- Put spring seat, valve spring and valve spring retainer from the other side. The loose coil ends of the spring should be facing downwards.

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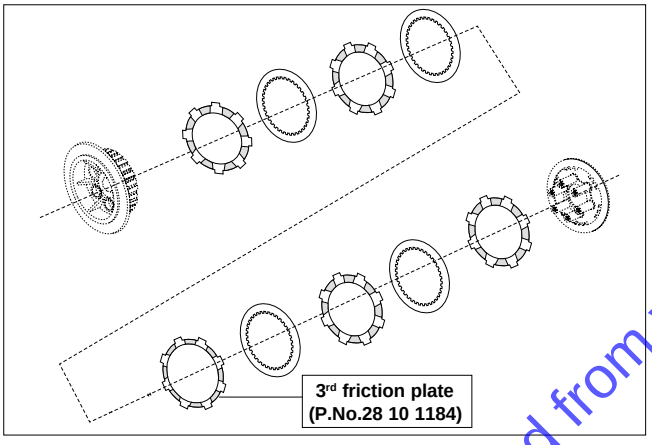
- Use the valve spring compressor to press down the valve spring retainer.
- Install the collets, and slowly remove the spring compressor. Ensure that the collets are seated properly holding the retainer down.
- Repeat same procedure for exhaust valve.
- Assemble cam shaft.
- Assemble both rocker arms & then respective pins.
- Fix locking plate for camshaft and inlet rocker arm pin with the help of screw pan cross.

Clutch Assembly :

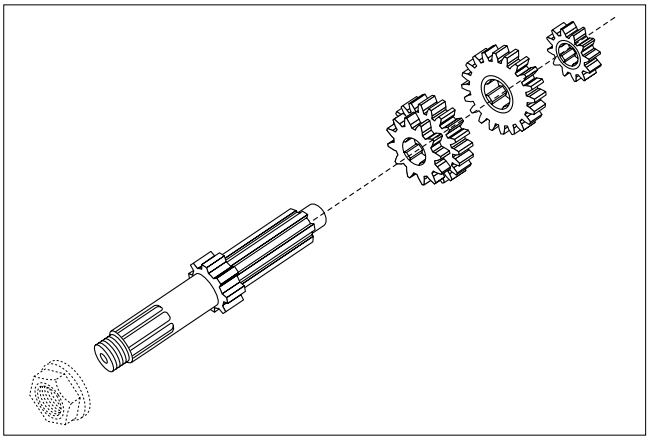
- Take wheel clutch and assemble plate friction and plate clutch alternatively on it starting with a friction plate.
- Insert Hub clutch into the subassembly described above by matching teeth of Hub clutch and mate clutch.
- Then place the above described subassembly into Housing complete clutch.



Sequence of clutch plate assly.

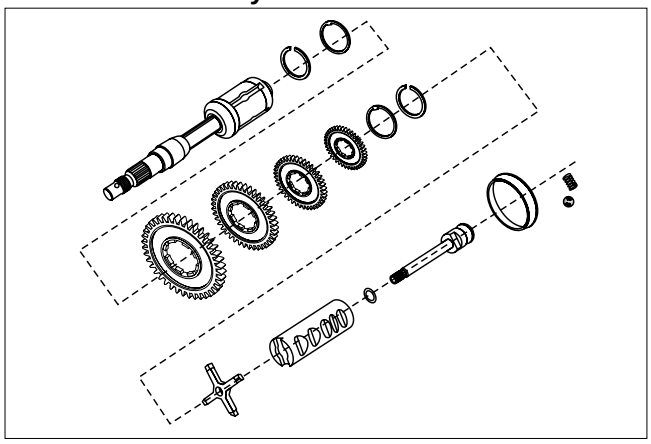
Intermediate Shaft Assembly :

- Assemble cluster gear on intermediate shaft in such a way that small gear of the cluster gear faces towards threaded end of the shaft.
- Then assemble 4th driver gear wheel.
- Assemble kick driven gear.
- Then press bearing on the intermediate shaft.



Intermediate Shaft Assembly

Main shaft Assembly :



- First assemble circlip on the main shaft (towards threaded end of mainshaft).
- Put shoulder washer on the circlip.
- Hold mainshaft vertical and slide cross into the slots of mainshaft. Position the cross in the slots where a circular groove is provided and rotate cross by 90°. Check that the projection provided at the centre of cross is facing upwards.
- Assemble gear selector inside main shaft. Match the projection on the cross with the slot of gear selector.

Check that the grooves provided on Gear selector are facing towards the holes provided on mainshaft for fixing spring loaded balls.

- Assemble washer on the gear selector.
- Tighten the stem on the cross.

CAUTION : STEM HAS LEFT HAND THREADING.

- Assemble 1st gear wheel (largest) on the mainshaft in such a way that the larger collar should be facing towards stem side or lesser collar should be facing towards threaded end of mainshaft.
- Assemble 2nd gear wheel (2nd largest) on the mainshaft in such a way that the larger collar is facing towards 1st gear wheel.
- Assemble 3rd gear wheel on to the mainshaft in such a way that the larger collar is facing towards 2nd gear wheel.
- Assemble 4th gear wheel in such a way that the larger collar is facing towards 3rd gear wheel.
- Then assemble shoulder washer and fix circlip.
- Put one steel ball into each of two holes provided on the mainshaft after smearing slight amount of grease on it.
- Assemble spring on each ball.
- Compress both the springs with the help of thin plates or hacksaw blade and assemble the cup on the springs.
  The cup should be assembled in such a way that lower diameter of cup should be facing towards gear wheels.

Clutch Cover Assembly :

- Press first oil seal then bearing & fix circlip for mainshaft from the outer side of clutch cover.
- Assemble adjuster with nut for Rear brake cable .

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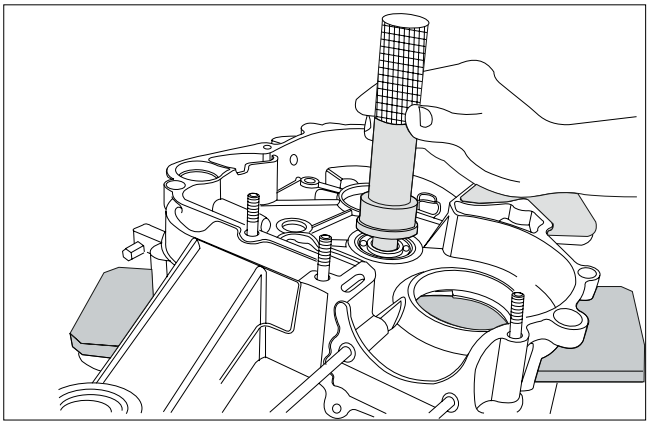
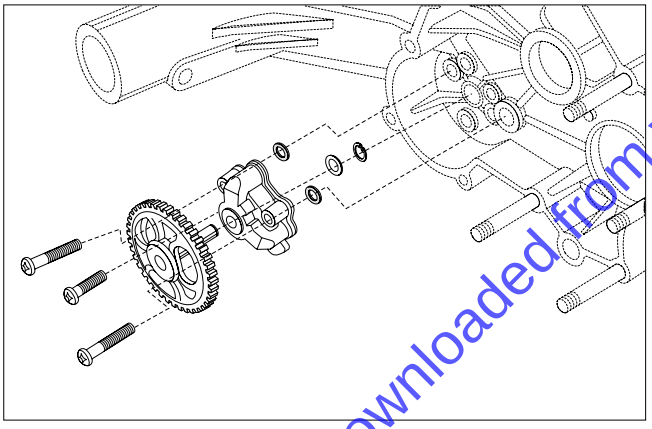
- Assemble 'O' ring into the bore for clutch lever.
- Assemble spring & plain washer on clutch lever spindle.
- Smear light coat of grease on clutch lever spindle and assemble it into the clutch cover alongwith internal lever.
- Lock the spring on the clutch cover lug.
- Apply some grease on plunger and assemble it on the internal lever.

Crankcase Clutch Side :

- Press ball bearing for intermediate shaft.



Fitment of bearing

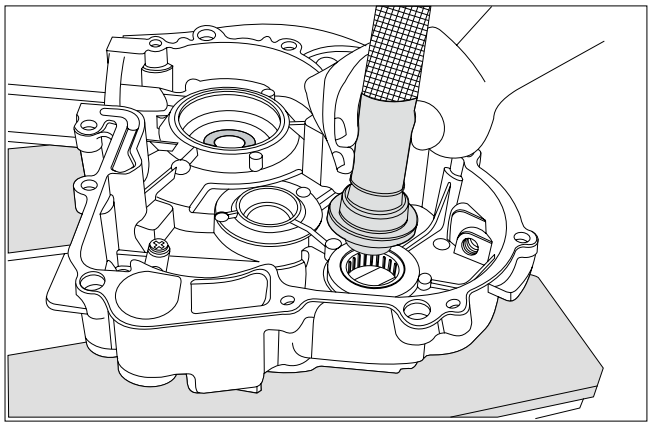


Assemble of oil pump

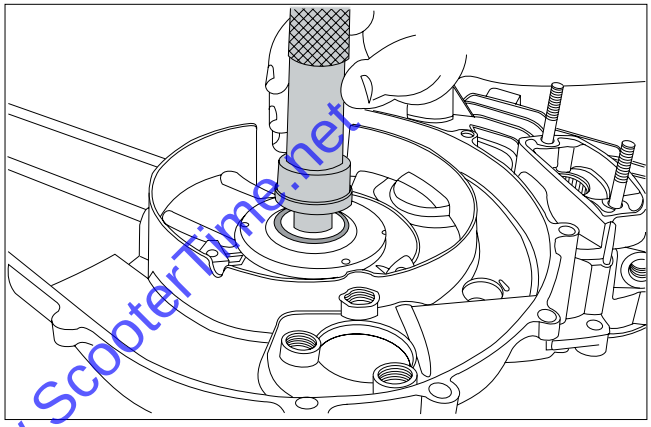
- Assemble 2 'O' rings for oil pump on the crankcase.
- Assemble hallow dowel pin.
- Assemble oil pump with the help of 3 screws and check freeness of oil pump gear.
- Assemble baffle with the help of 2 screws.
- Assemble rubber bush on the steel tube and press this assembly into the hole on crankcase.
- Fix the tube with the help of a screw.
- Fit oil drain plug alongwith washer.
- Assemble adjuster for clutch cable.

Crankcase Magneto Side :

- Assemble needle roller bearing with the help of special tool P. No. 37 1005 04.
- Press magneto side oil seal with the help of special tool P. No. 37 1030 61.(Inner driver ϝ 20)
- Assemble guide kick with help of 2 screws.

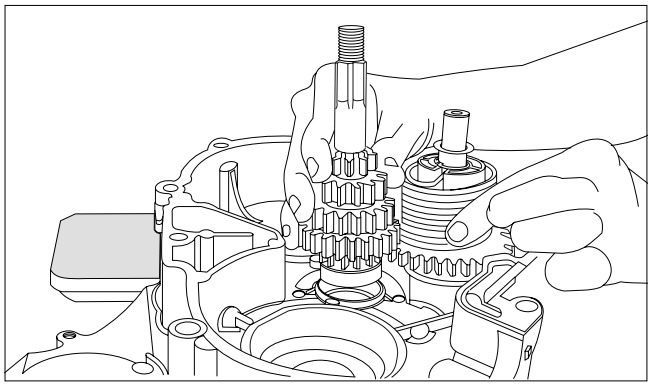


Assembly of needle roller bearing



Fitment of oil seal

- Assemble 'O' ring inside the hole for kick shaft.
- Assemble kick shaft assembly & intermediate shaft assembly at a time in their respective positions in crankcase.



Kick shaft & intermediate shaft assembly

- Rotate kick shaft & lock the ratchet gear below guide kick.
- Place the kick return spring on kick shaft in such a way that one end should be in the hole provided on kick shaft.
- Place Nylon guide spring between kick shaft & spring.
- Assemble circlip to lock the guide spring.
- Assemble other end of kick return spring into the crankcase lug.
- Assemble kick lever on the kick shaft.

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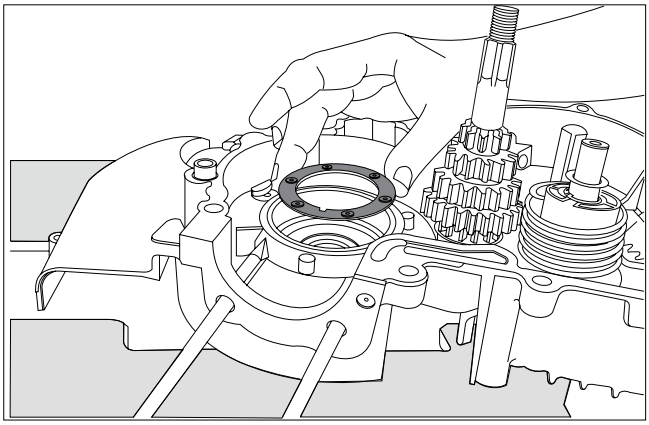
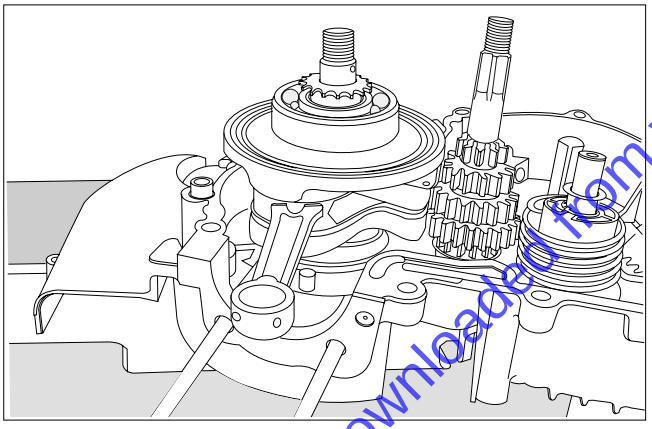
ENGINE ASSEMBLY :

- Take crankcase magneto side subassembly.
- Assemble the rubberised damper ring around the crankshaft bearing seat area in crankcase magneto side.



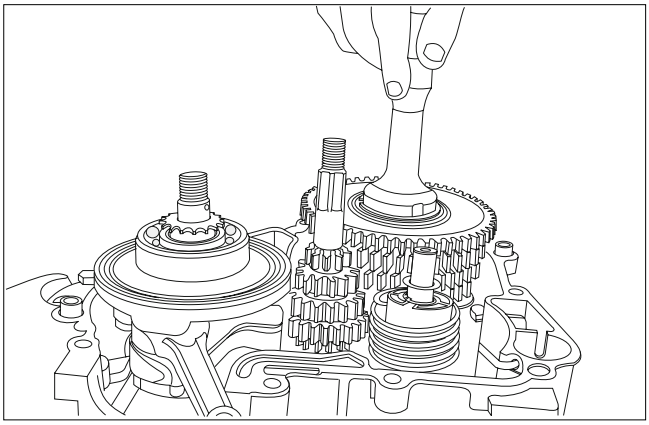
Damper ring for crankshaft

- Assemble the crankshaft assembly into the bearing seat of crankcase.
  Note : Crankshaft assembly is slide / loose fit in crankcase. If the crankshaft bearing is getting tight in crankcase, slightly heat the bearing seat by heater.



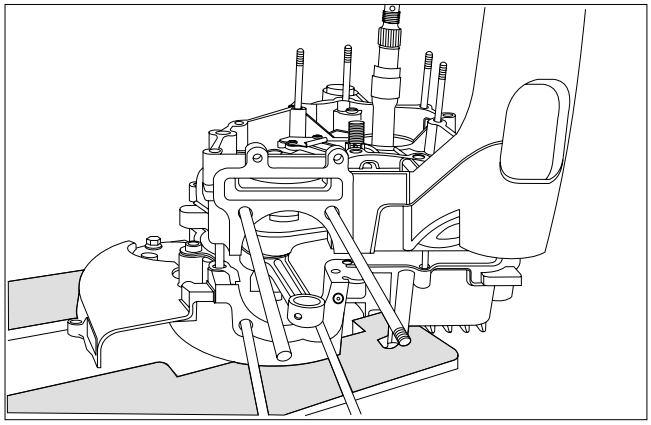
Assembly of crankshaft

- Assemble the main shaft assembly in the needle roller bearing by meshing it with intermediate shaft gears.



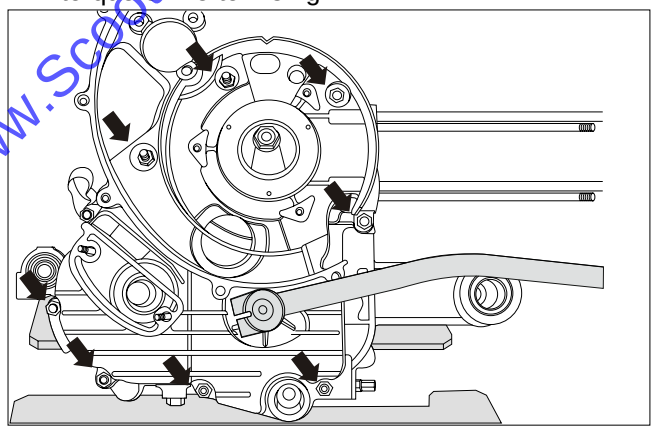
Assembly of mainshaft

- Assemble 2 no. of dowels on crankcase.
- Assemble the centre gasket on to the crankcase.
- Assemble crankcase clutch side on magneto side taking studs as guide.



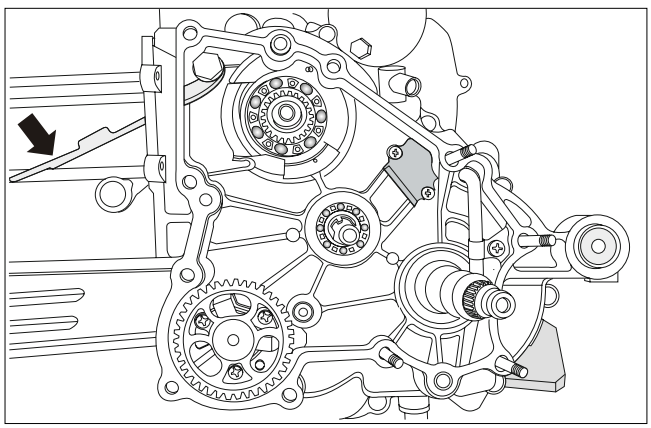
Crankcase assly.

- Assemble 'D' bolts alongwith plain & spring washers and nuts.
- Also assemble plain, spring washers and nuts on the crankcase studs.
- Tighten all the nuts in a criss-cross pattern to the torque of 1.5 to 1.8 kgm.



Nuts for crankcase

- Assemble guide chain (slack side) with the help of a special bolt and two plain washers on either side of guide chain.



Assembly of guide chain (slack side)

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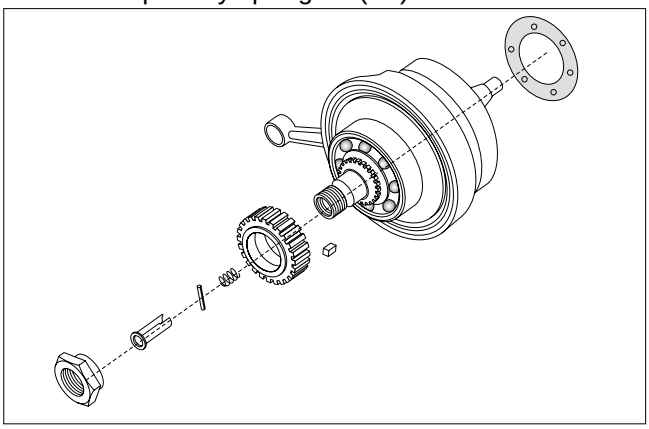
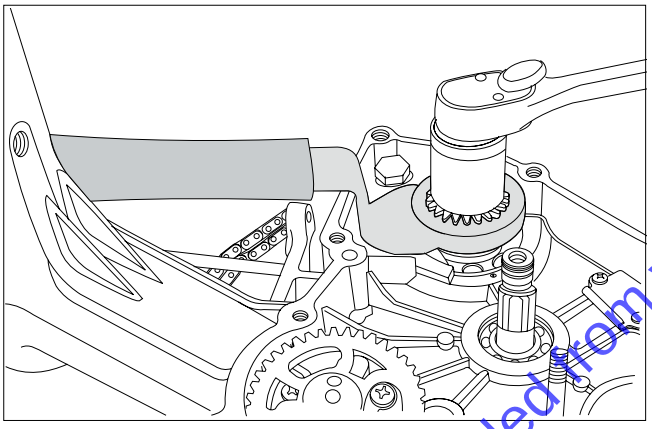
- Put the spring inside the hole on crankshaft.
- Assemble parallel pin in the through hole provided on the crankshaft arm.
- Assemble key (parallel) on the crankshaft key way and fix primary spur gear (I/P) on it.

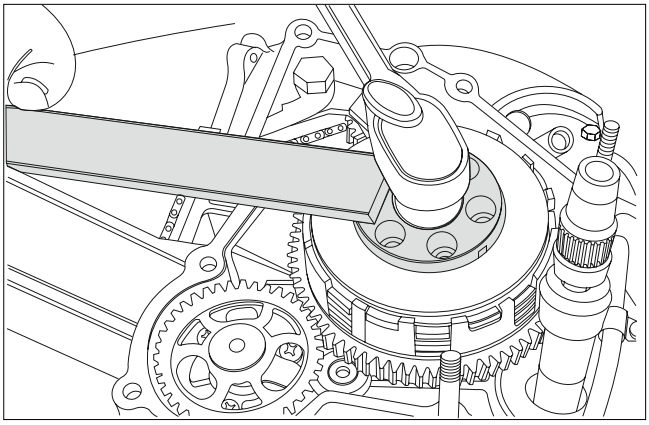


- Prefix the special nut on the crankshaft.
- Hold the primary spur gear with the help of special tool P. No. 37 1028 17 and tighten the special nut to 9 to 9.5 kgm torque.



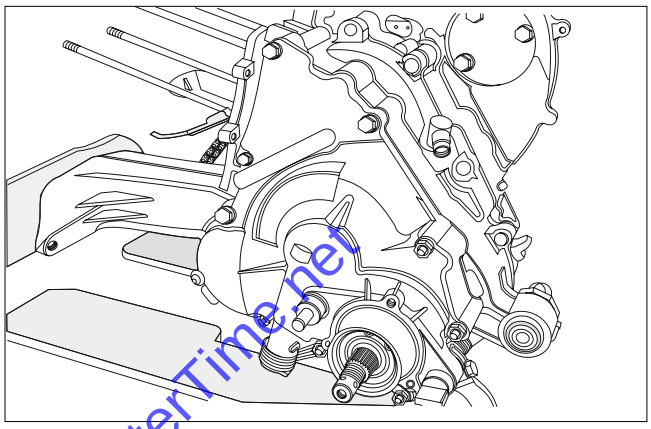
Fitment of primary spur gear

- Assemble timing chain on crankshaft sprocket.
- Assemble the plunger in such a way that it fits into the parallel pin fitted in the crankshaft arm.
- Assemble the spacer collar and clutch assembly on intermediate shaft.
- Hold the hub clutch with the help of a special tool P.No. 37 1031 52 and tighten the nut to the torque of 9 to 9.5 kgm.



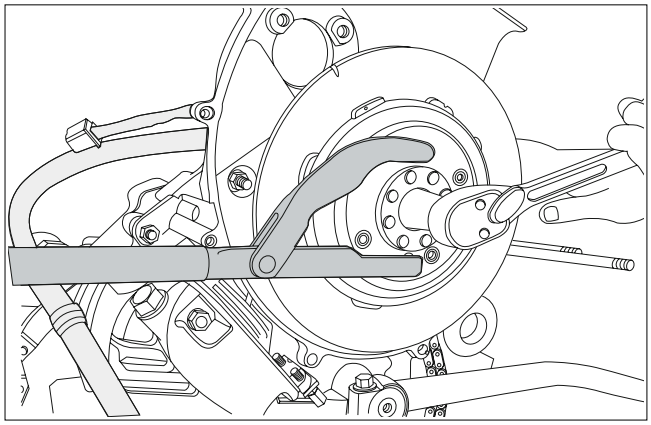
Fitment of clutch assly.

- Assemble springs on the hub clutch & plate the holding plate on it. Assemble bolts on the holding plate and tighten it in criss-cross pattern.
- Assemble collar & bearing on holding plate.
- Assemble 2 dowels on crankcase clutch side.
- Fix gasket for clutch cover.
- Assemble clutch cover on crankcase clutch side.
- Prefix 6 flanged bolts on clutch cover. Also prefix 4 nuts alongwith plain & spring washers on the studs.
- Tighten the flanged bolts & nuts in a criss-cross pattern to the torque of 1.3 to 1.5 kgm.



Bolts & nuts for mounting clutch cover

- Assemble stator assembly on crankcase magneto side by using 3 nos. of screw (pan cross), spring washers & plain washers.
- Fix the grommet of the stator harness on crankcase magneto side.
- Assemble woodruff key on the crankshaft.
- Assemble rotor on the crankshaft.
- Prefix the flanged nut alongwith spring washer.
- Hold the rotor by using special tool (37 1030 54) and tighten the flange nut to 5.5 to 6 kgm.



Fitment of magneto rotor

- Fix the fan on magneto rotor.
- Pull out the gear shifter stem and engage the cross in 4th gear.
- Assemble gear shifter gasket on crankcase magneto side.
- Engage lever of gear shifter in stem and taking studs as guide, assemble the gear shifter.

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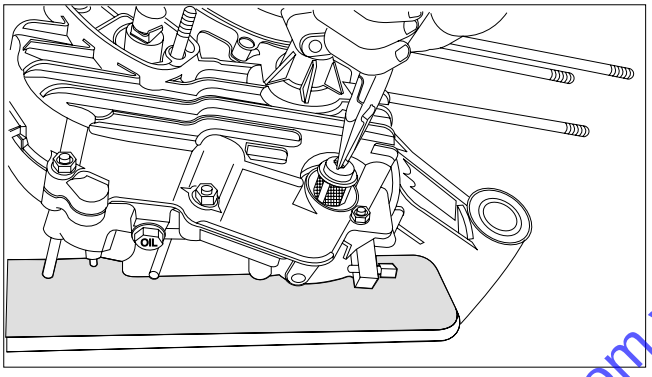
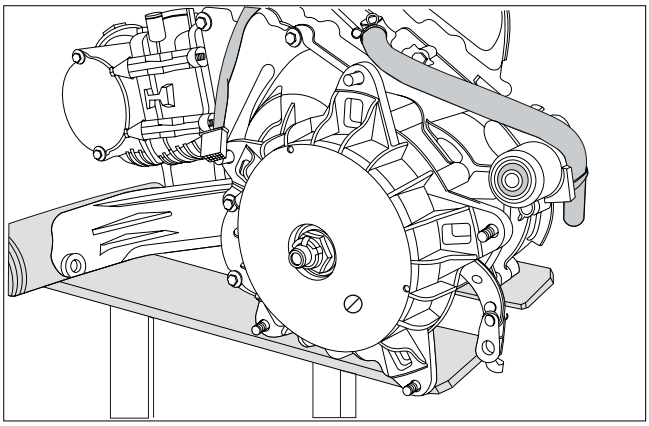
- Prefix nut, plain washer & spring washer and tighten them.
- Assemble larger O' ring for back plate and also assemble 2 nos. of smaller rubber gaskets on crankcase.
- Assemble back plate and fix 3 screws alongwith spring washer.
- Assemble cam brake and 'O' ring on the crankcase.
- Assemble rear brake lever along with rear brake links on cam brake.
- Fix the rear brake lever on cam brake with the help of flanged bolt.
- Assemble brake shoes alongwith spring on the cam brake and pivot pins.
- Assemble cam brake return spring on cam brake and attach the other end of spring to crankcase magneto side.
- Prefix 'O' ring on oil strainer nylon mesh.
- Assemble oil strainer on the crank case by holding the lug provided on the strainer body with the help of a nose plier.



Assembly of oil strainer

Note :If the oil strainer is fitted in the reverse way i.e lug on the strainer body goes inside then there will not be any oil supply to oil pump.

- Assemble O' ring on the cap strainer.
- Assemble the cap strainer along with O' ring on the crankcase.
- Assemble rear brake drum on mainshaft.
- Assemble washer and castle nut on mainshaft. Tighten the castle nut. Fit the cap on castle nut and lock it with split pin.



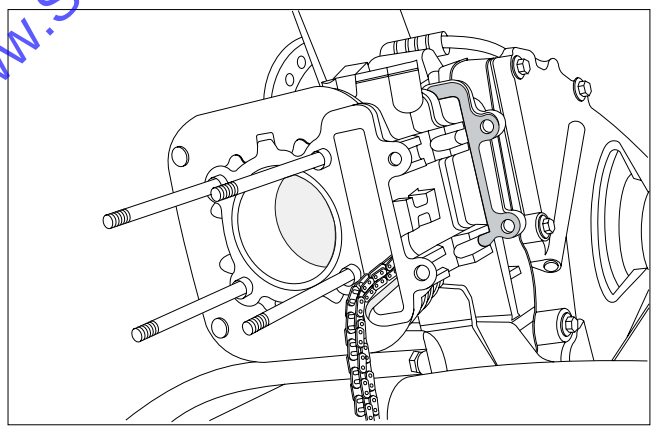
Fitment of rear brake drum on mainshaft

- Assemble 2 dowels on crankcase. (One on clutch side and the other on magneto side) block sitting area.
- Assemble gasket for cylinder block.
- Assemble piston assembly on connecting rod with piston pin.
- Assemble circlips on both sides of piston pin.
- Apply slight amount of oil on piston skirt and rings.
- Positioning of rings on piston should be as follows:-

Top ring	Opening facing towards exhaust side
2nd ring	Opening facing towards inlet side
Oil expander	Opening facing towards inlet side
Top oil rail	30 ^{0} left of exhaust side
Bottom oil rail	30 ^{0} right of exhaust side

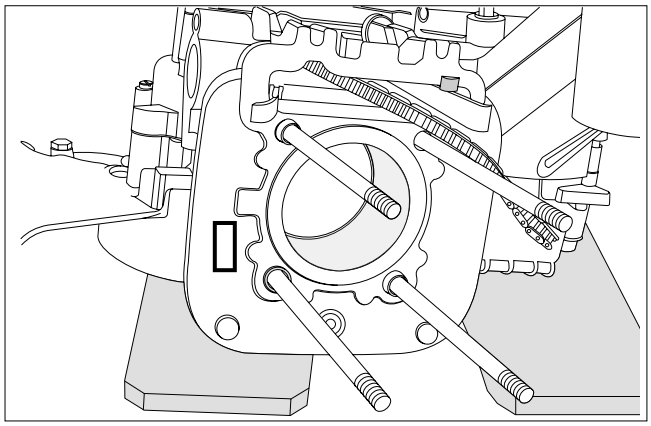
NOTE : Keep ' Top' marking on top and 2nd ring on upper side. Keep 'IN' marking on piston top towards intake side.

- Clean cylinder block and apply oil on liner bore and assemble it on piston. Take out timing chain from the tunnel provided on the crankcase. Check free rotation of timing chain and motion of piston.
- Assemble guide chain through tunnel provided on the cylinder block into the crankcase.



Assembly of cylinder block

- Assemble Head gasket.
- Assemble bush (oil seal) on cylinder block face (for oil carrying stud).



Position of bush (oil seal) on cylinder head

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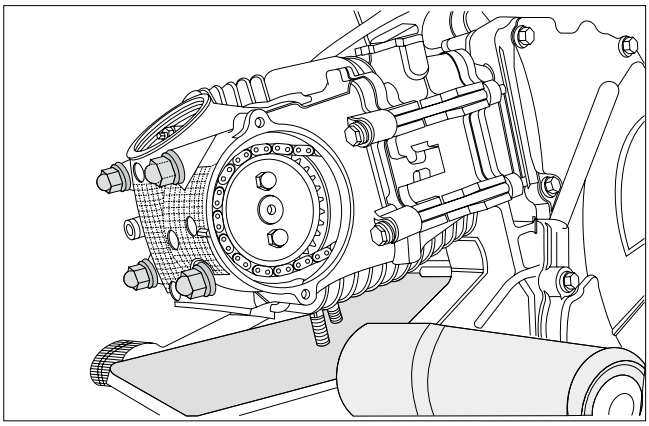
- Put timing chain through tunnel on cylinder head and hold on holder camshaft on cam shaft.
- Fix cylinder head with the help of special copper plated washers and dome cap nut. Apply torque of 2.0 to 2.2 Kg.m. to dome cap nuts.
- Assemble two flanged bolts on cylinder head joining cylinder head and cylinder block with crankcase.
- Assemble chain on timing sprocket and fix it with the help of two bolts.
  Keep piston at TDC position with the help of rotor and marking provided on crankcase magneto side. Check that the marking on timing chain sprocket matches with marking provided on cylinder head.



Assembly of cylinder head

- Position chain tensioner assembly into the bore provided on cylinder block and fix it with the help of 2 flanged bolts.
- Release the tensioner bolt by 1 thread and tighten it again.
- Align rotor marking with crankcase marking. Check that marking on timing chain sprocket matches with marking on cylinder head. Also check that both the valves are in closed position by checking freeness of tappets.

  Set tappet clearance on intake valve with the help of feeler gauge and tappet tightening tool. Lock the tappet locking nut after setting tappet clearance to 0.8 to 1.2 mm.

  Repeat the same procedure for exhaust valve keeping tappet clearance 0.8 to 1.2 mm.

- Rotate rotor anticlockwise 3-4 times and check again the tappet clearance by feeler gauge after aligning markings as stated above.
- Fix 'O' ring on manifold and assemble it on crankcase alongwith insulator. Fix 3 flanged bolts.
- Assemble 'O' ring on camshaft cover and fix it on cylinder head. Align the holes of cover with cylinder head and fix two flanged bolts.
- Assemble 'O' ring on cap for intake and exhaust valves. Fix the caps on respective position on cylinder head and tighten it to the torque of 0.5 to 0.9 kg.m.
- Prefix spark plug by hand and tighten it to the torque 2.5 to 3 kg.m.
- Assemble fan cover and cowling into the slots of each other. Fix the fan cover and cowling screws.
- Assemble H.T. Coil alongwith its bracket on crankcase magneto side with the help of two screws.

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SERVICE DATA (ENGINE)

SR.NO.	DESCRIPTION	STANDARD	REMARK
1	**CARBURETTOR :**		
	Make & Type	Keihin PB20	
	Main jet	108	
	Main air jet	90	
	Pilot jet	42	
	Jet needle	OB 4	
	Jet needle clip position	3rd from top	
	Float height	10.7 mm	
	Air screw setting (From fully closed position)	2.25 ± 0.25 turns	
2	**CYLINDER HEAD :**		
	Cylinder head warp	0.03 mm	
3	**COMPRESSION PRESSURE**	12 ±1 kg / cm^2	
4	**VALVES**		
	Tappet clearance (In. & Exh.) engine cold	0.08 -0.12 mm	0.003" to 0.005"
	Valve(Inlet) head thickness	0.7 ± 0.15 mm	
	Valve(Exhaust) head thickness	1.0 ± 0.15 mm	
	Valve (Inlet) stem diameter	5.45 - 5.51 mm	
	Valve (Exhaust) stem diameter	5.45 - 5.48 mm	
	Valve (Exhaust) guide inside diameter	5.520 - 5.532 mm	
	Valve spring free length	37.5 mm	
5	**CAM & ROCKER :**		
	Rocker arm inside diameter	10.015 mm	
	Rocker shaft diameter	9.975 - 9.990 mm	
	Cam height (Inlet)	30.81 mm	
	Cam height (Exhaust)	30.44 mm	
6	**CAMSHAFT CHAIN LENGTH (20 Links)**	127.00 - 127.48 mm	

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SERVICE DATA (ENGINE)

SR.NO.	DESCRIPTION	STANDARD	REMARK
7	**CYLINDER / PISTON GROUPING**		
	Cylinder bore	57.000 - 57.015 mm	
	Piston diameter.	56.979 - 56.995 mm	Measure at 7 mm from bottom.
	Cylinder / Piston clearance	0.010 - 0.029 mm	Use Cylinder & Piston of same group .
8	**PISTON RING**		
	Piston ring groove thickness		
	a) Top ring	1.0 mm	
	b) Second ring	1.0 mm	
	c) Oil	2.0 mm	
	Piston ring thickness		
	a) Top ring	1.0 mm	
	b) Second ring	1.0 mm	
	Piston ring end gap		
	a) Top ring	0.2 -0.45 mm	
	b) Second ring	0.2 -0.45 mm	
	Piston ring gap position		
	Top ring - Towards Exhaust side		
	Second ring - Towards Inlet side		
	Top oil rail - 30^0 left of Exhaust side		
	Oil expander - Towards Inlet side		
	Bottom oil rail - 30^0 right of Exhaust side		
9	**CRANKSHAFT RUNOUT**	0.02 mm	
10	**CONNECTING ROD BIG END PLAY (Axial)**	0.15 - 0.35 mm	
11	**CLUTCH ASSLY. :**		
	Friction plate thickness	3.1 - 3.3 mm	
	Pressure plate thickness	1.25 mm	
	Clutch spring free length	25.5 ± 0.3 mm	

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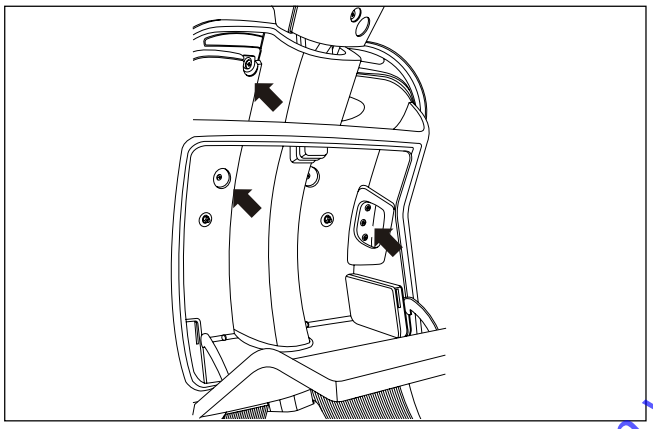
DISMANTLING AND ASSEMBLY : CHASSIS

REMOVAL OF 'T' NOSE

A) Removal of 'T' Nose assly. from chassis :

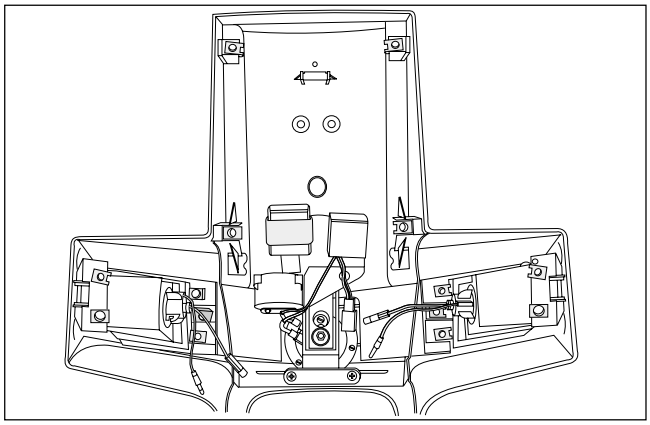
- Open Luggage box door.
- Remove 2 square grommets on the side walls of the Luggage box and 2 round grommets on the front face of luggage box.
- Remove 2 screws each from both side attaching Nose with chassis from square holes provided on the both side walls of Luggage box.
- Remove 1 screw each from the round holes provided on the front face of Luggage box.
- Remove 2 screws provided on the top of Luggage box.
- Take out 'T 'Nose after disconnecting horn, deeper, flasher and AC/DC Unit cables.



Mounting screws for 'T' Nose

B) Dismantling of 'T' Nose assly.

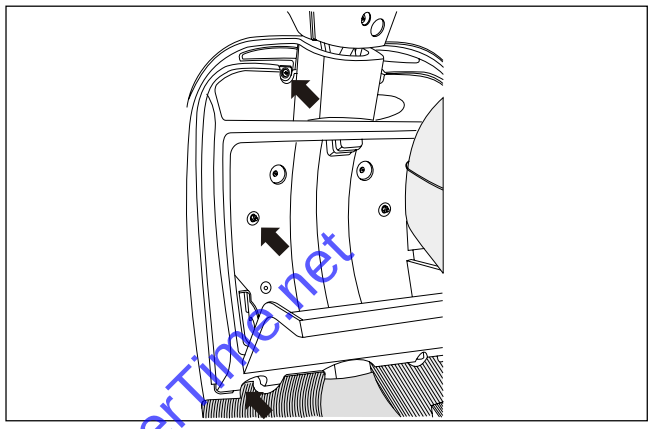
- Remove 2 screws mounting Grill on 'T' Nose.
- Remove 2 screws mounting LH blinker and slide out blinker assly from nose .
- Similarly dismantle RH blinker.
- Remove 4 bolts for Beeper/Flasher mounting bracket and horn.
- Take out horn.
- Remove 2 screws for beeper and separate it from bracket.



Dismantling of 'T' Nose

REMOVAL OF LUGGAGE BOX

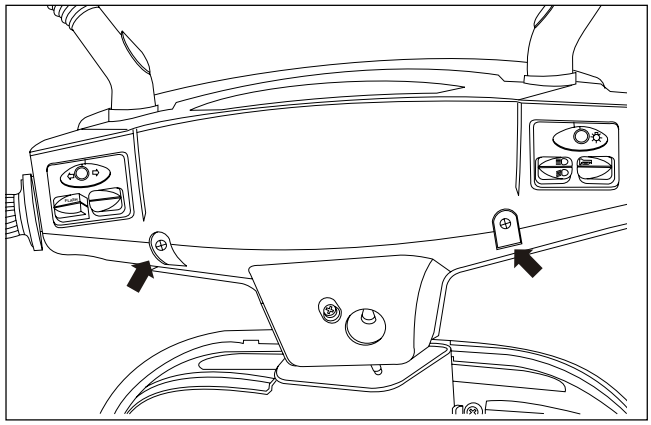
- Open Luggage box door.
- Remove 2 screws provided on the topmost portion of Luggage box.
- Remove 2 Nuts from the door opening.
- Remove 2 screws provided on the lowermost portion of Luggage box and take out Luggage box assembly.



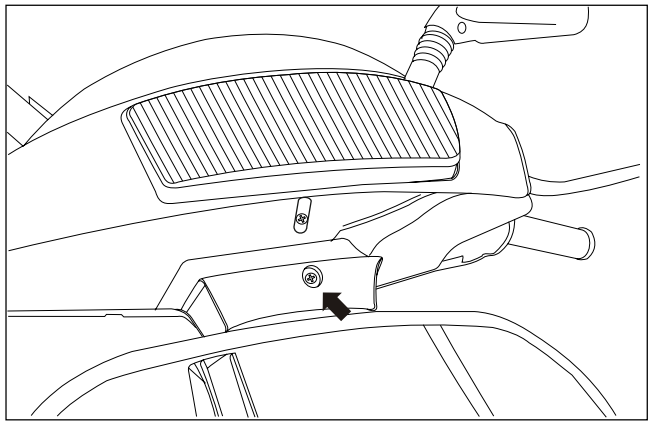
Mounting screws for Luggage box

REMOVAL OF HANDLE BAR COVERS :

- Remove 2 screws on handle bar rear cover holding handle bar front cover.
- Remove one screw provided on handle bar front cover just below Head Light adjustment screw.



A) Screws on rear cover



A) Screw on front cover

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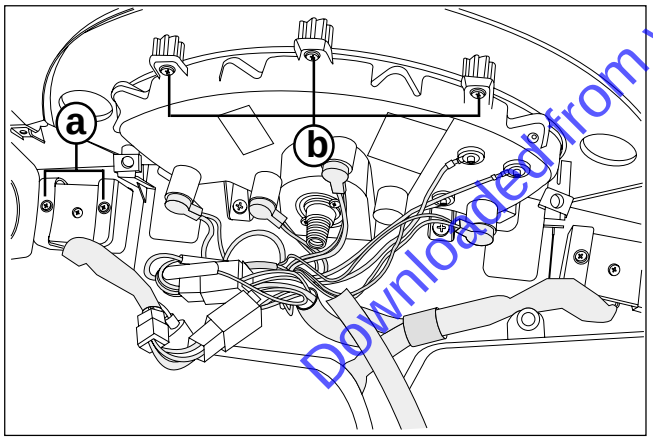
- Carefully disengage the locking lugs of handle bar front cover by prying with the help of a small screw driver.
- Take out Handle bar front cover.
- Disconnect Head lamp harness coupler and remove handle bar front cover.
- Remove both mirror by removing packing and hex socket bolts.
- Disconnect L.H. and R.H. Switch couplers near steering column lower mounting race.
- Remove 2 screws mounting Handle bar rear cover on handle bar (from front side)
- Remove 1 screw mounting handle bar rear cover from back side.
- Remove speedometer cable connection and harness connection.
- Take out Handle bar rear cover.

DISMANTLING OF HANDLE BAR COVER REAR :

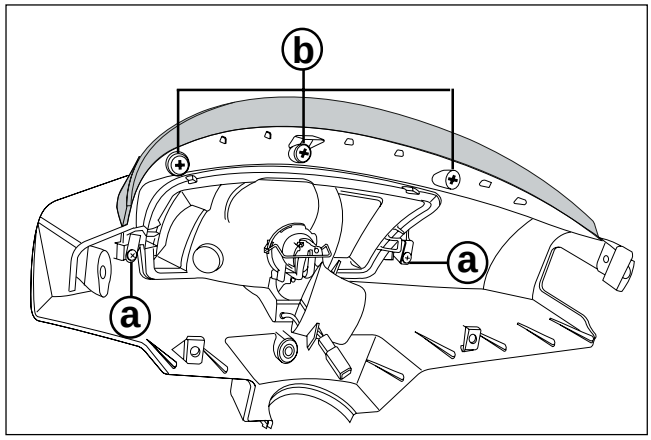
- Remove 2 spring (clip) nuts from cover.
- Remove 2 screws for mounting LH switch on cover and take out LH switch from the window provided on cover.
- Remove 2 screws for mounting RH switch on cover and take out RH switch from the window provided on cover.
- Remove 5 screws alongwith plain washer for mounting instrument panel and take out instrument panel.



Dismantling of Handle bar cover rear
a) Screw for switches
b) Screw for instrument panel

DISMANTLING OF HANDLE BAR COVER FRONT :

- Remove 2 spring (clip) nuts from cover.
- Remove 2 screws for mounting Head lamp mounting brackets.
- Screw In the Head lamp beam adjustment screw and take it out from the inner side of cover.
- Remove 3 lock washers of fairing carefully and take out fairing.

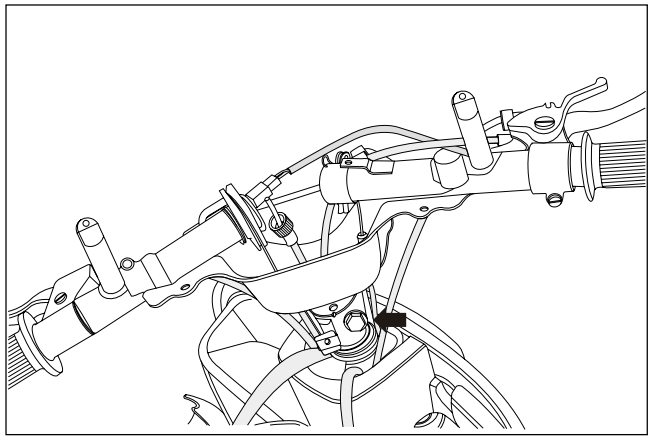


Dismantling of Handle bar cover front
a) Screw for mounting head lamp
b) Lock washer for fairing

REMOVAL OF HANDLE BAR :

A) Removal of handle bar from steering column :

- Remove Handle bar front cover and rear cover.
- Disconnect front brake cable from wheel end.
- Take out front brake cable from RH lever.
- Disconnect both Gear cables from gear shifter end and also disconnect them from Gear control link.
- Disconnect throttle & Choke cable from carburettor end and from Gas control link.
- Disconnect front brake switch connections.
- Disconnect sensor connections.
- Remove handle bar mounting bolt.



Handle bar mounting bolt

- Lift handle bar from steering column.
- Disconnect Gear cables and Throttle cable by slipping nylock provided on cable outers from handle bar body and take out Handle Bar.

b) Dismantling of handle bar

- Remove 3 spring nuts on cover mounting brackets.
- Remove 2 screws to take out sensor assly from handle bar.
- Take out 2 bolts alongwith spring washer for mounting cover mounting bracket
- Remove both handgrips.

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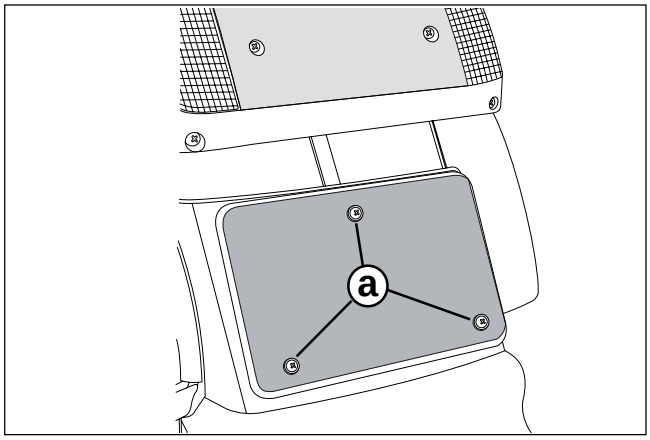
- Remove spring clip holding gas control pulley and take out gas control pulley. Pull out gas control tube.
- Remove spring clip holding gear control link and take out gear control link. Remove plain and special washer. Pull out gear control tube assly.
- Take out silent bushes from handle bar LH and RH tubes with the help of a suitable tube or 'L' tommy.

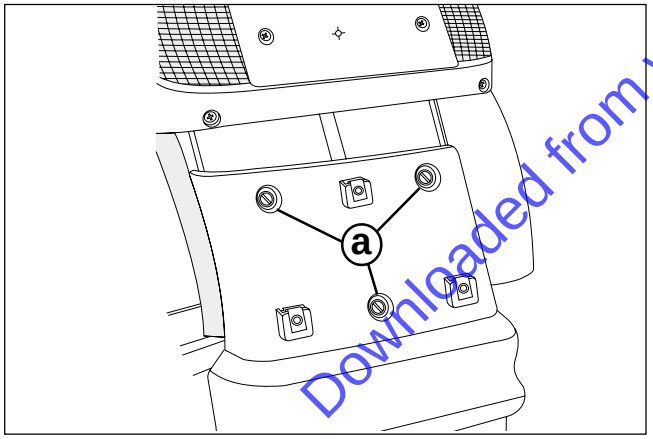
REMOVAL OF TAIL PIECE ASSLY :

- Remove 3 screw pan cross (self tapping) alongwith plain washer for fixing rear number plate.



a) Screws for rear number plate

- Remove 3 screws mounting tail piece on chassis alongwith plain washer, spring washer and nut.



a) Screws for tail piece

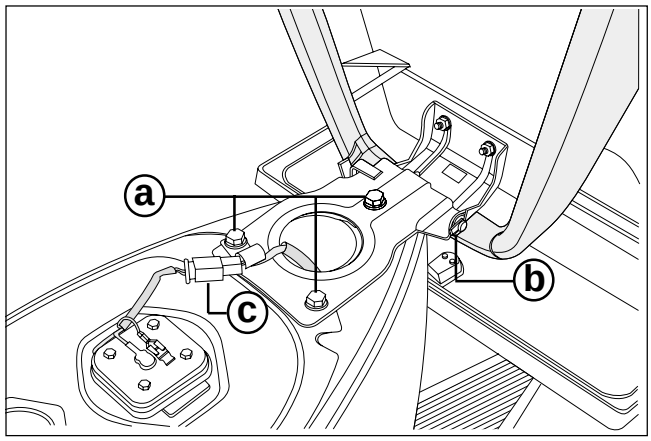
REMOVAL OF DUAL SEAT :

a) Removal of dual seat from chassis

- Unlock seat lock with key and lift the seat.
- Disconnect fuel gauge coupler.
- Remove 3 bolts mounting the seat hinge on chassis alongwith spring washers.
- Remove the clip holding harness from fuel gauge tank unit.
- Take out seat assly with hinge.

b) Dismantling of dual seat .

- Remove 2 nuts mounting the hinge bracket on seat alongwith spring washers.
- Remove split pin ,plain washer and remove pin holding hinge bracket with seat hinge.
- Remove 2 nuts mounting hook for seat lock alongwith spring washers.



Removal of dual seat
a) Bolts for seat hinge b) Split pin c) Coupler

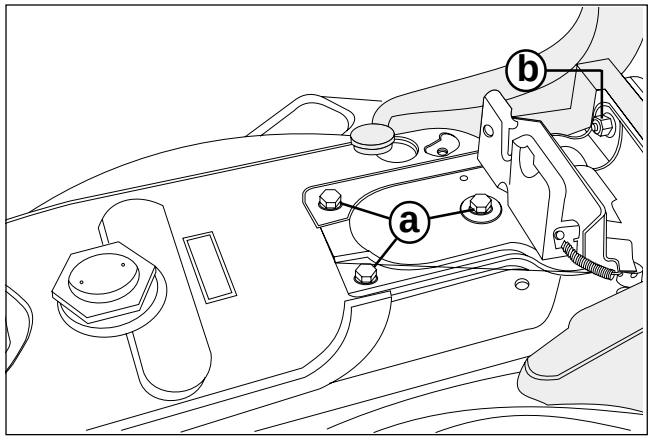
REMOVAL OF SEAT LOCK MECHANISM :

a) Removal of seat lock mechanism from carrier plate assly:

- Unlock seat lock with key and lift the seat.
- Disconnect seat lock cable from seat lock & seat lock mechanism.
- Remove 2 bolts mounting the seat lock mechanism and bracket seat lock alongwith plain & spring washers.
- Take out seat lock mechanism and bracket seat lock.
- Remove screw mounting cable seat lock alongwith spring washer and take out cable.

REMOVAL OF CARRIER PLATE :

- After Removal of seat lock mechanism.Remove 3 bolts mounting carrier plate on chassis.
- Remove 2 nuts mounting carrier plate on Grab handle alongwith plain & spring washers.
- Take out carrier plate.



Removal of carrier plate
a) Bolts for mounting carrier plate.
b) Nuts for mounting carrier plate on grab handle.

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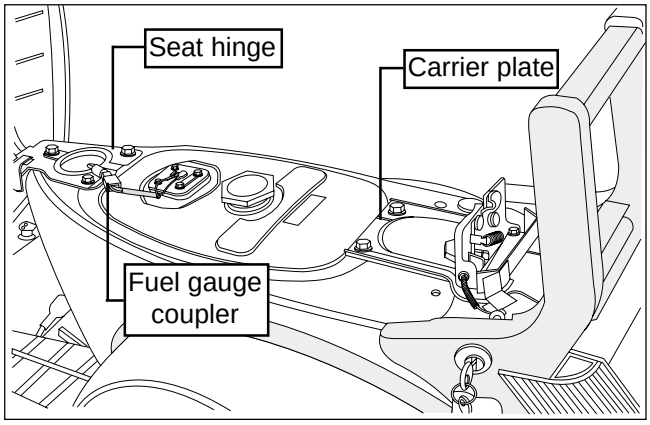
REMOVAL OF PETROL TANK

a) Removal of petrol tank from chassis

- Removal of seat hinge with dual seat & carrier plate with seat lock:
- Disconnect coupler joining fuel gauge tank unit with main wiring harness.
- Lift the fuel tank and remove vaccum pipe & fuel pipe alongwith clips from fuel cock assly.
- Take out fuel tank with fuel cock assly. & gasket .



Removal of petrol tank

b) Dismantling of petrol tank

- Remove all the fuel from the tank.
- Remove 4 special bolts for mounting fuel gauge tank unit. and take it out carefully without damaging float and float lever alongwith rubber gasket.
- Loosen the two mounting bolts and take out fuel cock assly, from bottom of the tank.

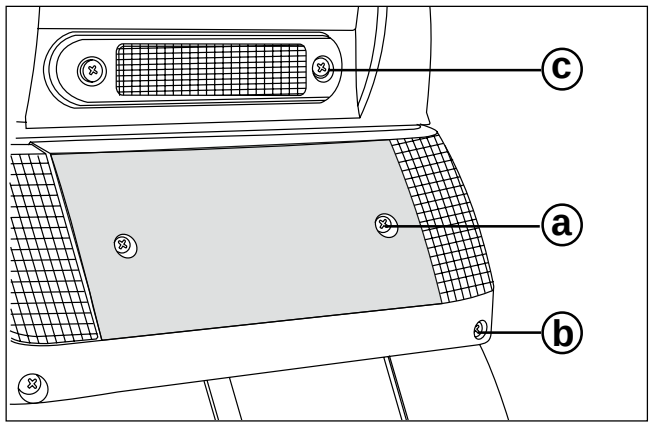
REMOVAL OF GRAB HANDLE :

A) Removal of grab handle from chassis:

- Open seat lock and lift the seat.
- Release seat lock cable.
- Remove 2 nuts of plate grab handle located inner side chassis below tail lamp.
- Remove 2 nuts attaching grab handle with carrier plate. Take out grab handle assly.

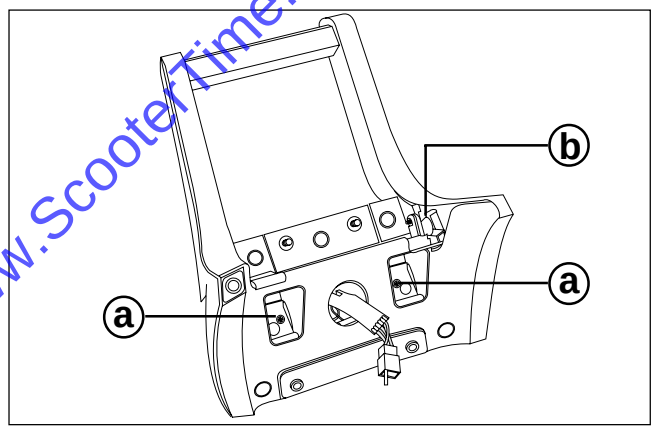
B) Dismantling of grab handle:

- Remove 2 screws for tail lamp lens.
- Remove tail lamp & rear side indicator lens.
- Remove 2 screws of bottom piece grab handle.
- Remove 2 screws of reflex reflector.



a) Screws for lens b) Screws for bottom piece
c) Screws for reflex reflector

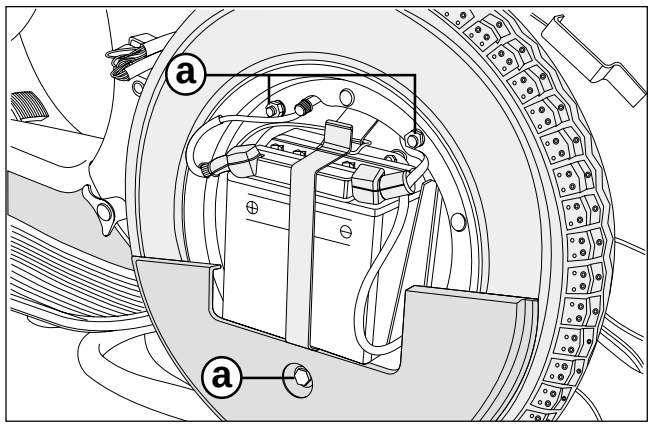
- Remove 2 screws of tail light reflector and take out tail light reflector.
- Remove clip for seat lock with barrel and take out seat lock with barrel.



a) Screws for reflector b) Clip for seat lock

SPARE WHEEL BRACKET REMOVAL

- Take out LH bonnet.
- Remove spare Wheel cover & spare wheel.
- Remove screw pan cross mounting voltage regulator on spare wheel bracket and disconnect the terminals.
- Remove 4 bolts take out footrest.
- Remove 5 bolts mounting sp. wheel bracket on chassis and take out spare wheel bracket.



a) Bolts for removal of spare wheel

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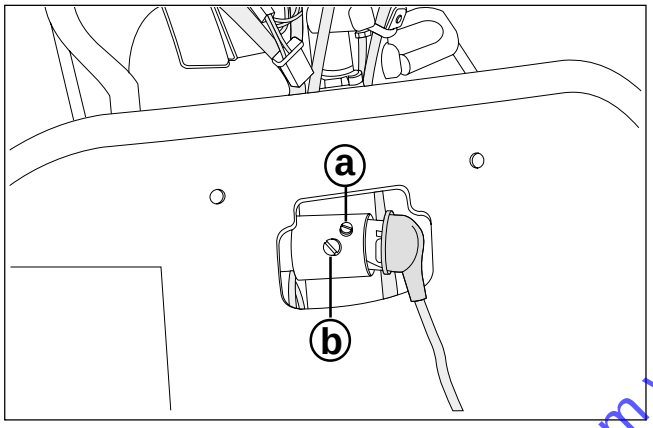
REMOVAL OF AIR FILTER BOX

- Remove spare wheel.
- Take out Air Filter element.
- Remove Dual seat hinge, carrier plate.
- Take out fuel tank.
- Remove flange bolts of Air filter from engine bonnet side.
- Slide out outlet of air filter from the hole on chassis and take out Air Filter box.

REMOVAL OF STEERING LOCK

- Remove 'T' nose.
- Remove screw for ignition switch and take out ignition switch.
- Remove screw for lock cam. Ensure that key is either in 'ON' or 'OFF' position and remove lock cam with nose plier. **Otherwise lock cam will not come out and may be damaged.**

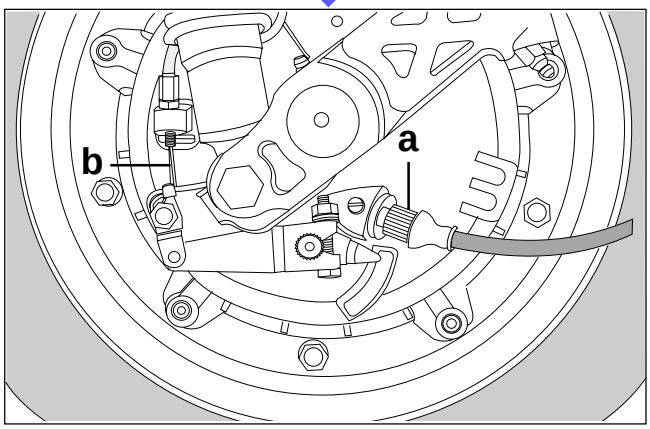


a) Screw for ignition switch b) Screw for lock cam

- Press the lug of lock and pull the lock barrel assly. with key. Ensure that spring plate will not fall down.

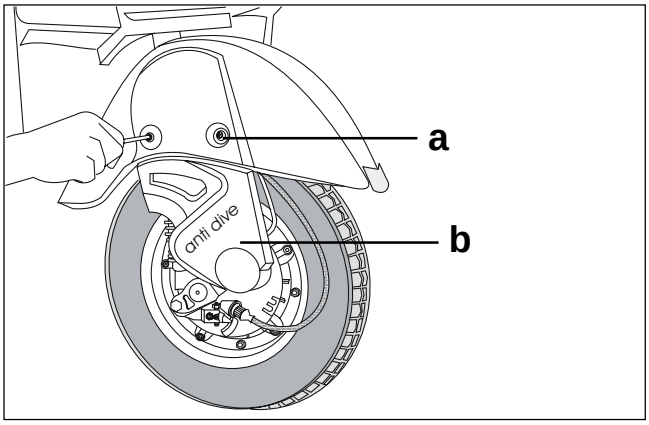
REMOVAL & DISMANTLING OF STEERING COLUMN

- Remove handle bar covers and handle bar as explained.
- Disconnect speedo cable and front brake cable .



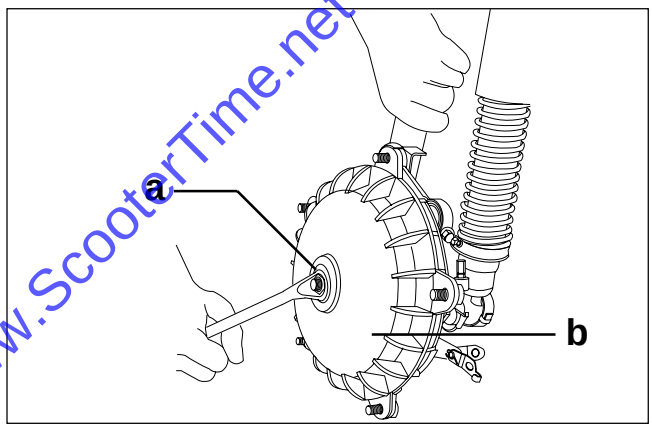
Removal of Speedo cable & Front brake cable
a) Speedometer cable b) Front brake cable

- Remove front wheel.
- Remove mudguard side cover screws and take out antidive cover .



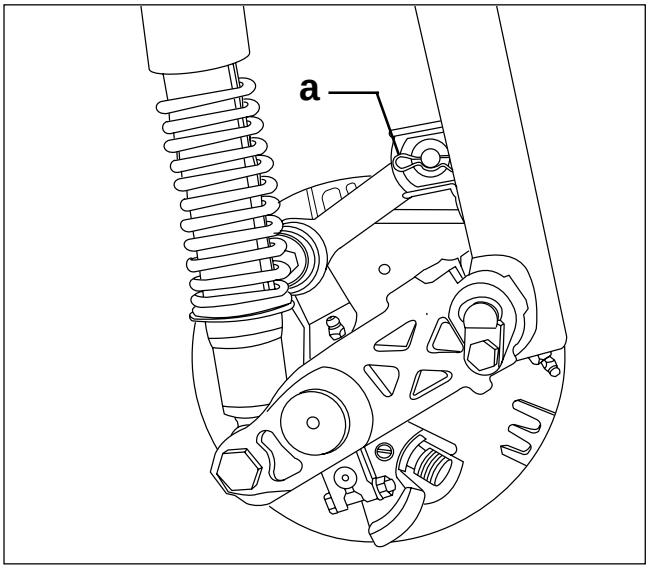
Removal of Antidive cover
a) Screws b) Antidive cover

- Remove front brake drum nylock nut and take out front brake drum.



Removal of Front brake drum
a) Nylock nut b) Front brake drum

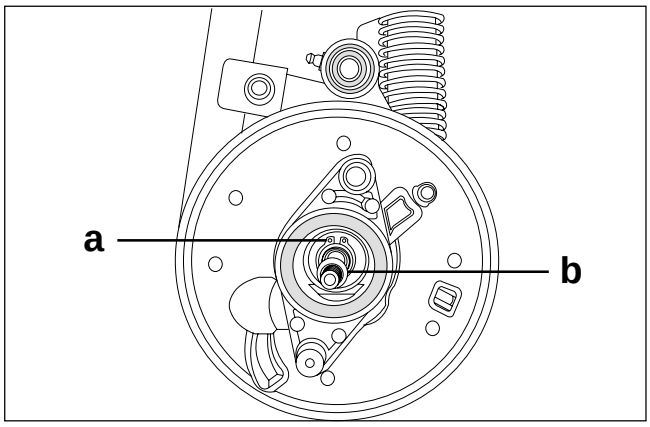
- Remove snap pin and then remove bolt connecting link of steering column.



Removal of Snap pin (a) for Antidive link

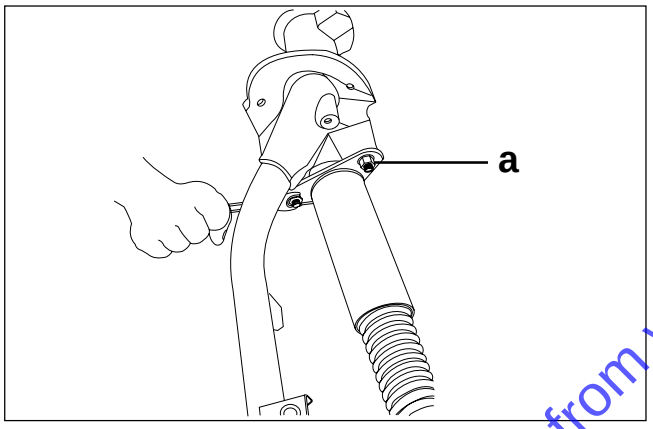
Downloaded from www.ScooterTime.net

- Remove circlip holding front brake panel on front axle and then remove front brake panel .



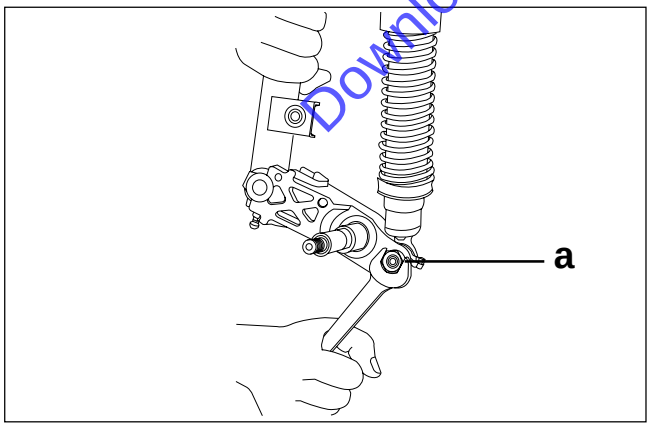
Removal of Circlip for removing Front brake panel
a) Circlip b) Washer

- Remove front shock absorber upper mounting bracket by removing 2 nuts .



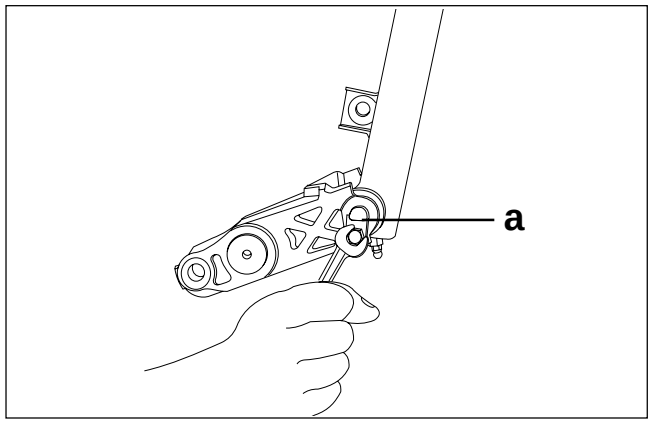
Removal of Upper bracket (a) for Fr. shock absorber

- Remove front shock absorber lower end bolt and then take out front shock absorber .



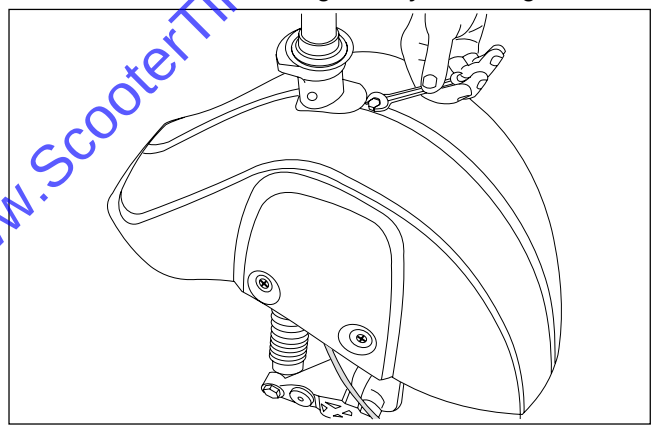
Removal of Front shock absorber lower bolt (a)

- Remove hub pin locking plate bolt and lock plate .
- Remove hub pin alongwith shoulder washer and take out front hub .
- Using hook spanner (P.No. 37180101) unscrew lock nut and upper bearing race. Take care to hold steering column to avoid it from falling down. Remove upper and lower steering ball cage.



Removal of Lock plate (a)

- Tilt the scooter on one side and take out the steering column carefully from the bottom side.
- Give suitable support below floor board of chassis.
- Using puller (P.No. 37180103) remove lower bearing race from fork. Remove top bearing race by special tool (P.No.37180506).
- Remove the front mudguard by removing two bolts.

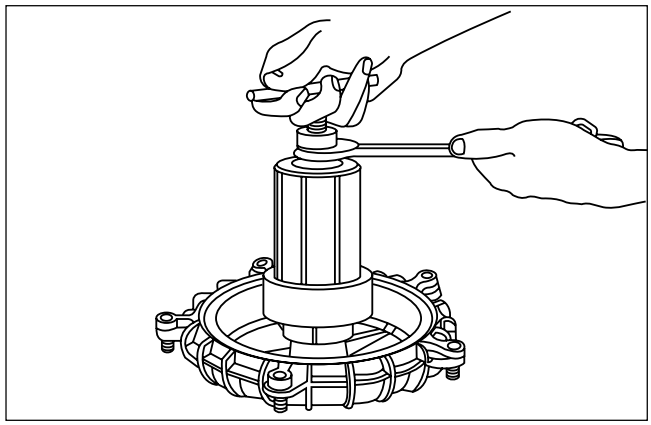


Removal of Front mudguard

- Remove grease nipple provided at cross tube of steering column.

FRONT BRAKE DRUM DISMANTLING:

- Remove speedometer gear and spacer from front brake drum by using Extractor (P. No. 37151905) which is to be used along with 37100114.



Removal of Speedometer gear

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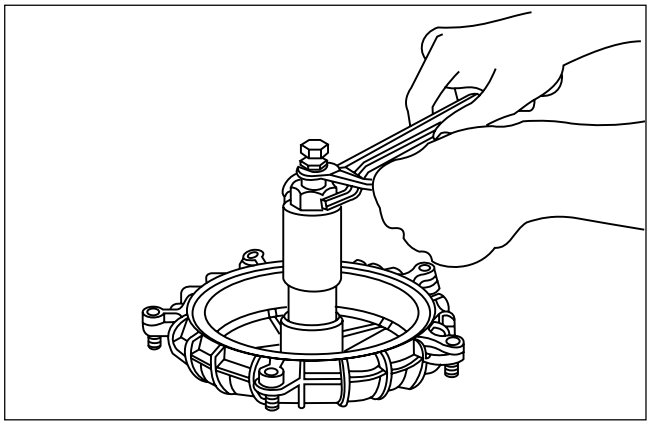
- Remove the needle roller bearing from the Brake drum by using Extractor (P. No. 371703 05) without its cup but with the tool (P. No. 371819 04).

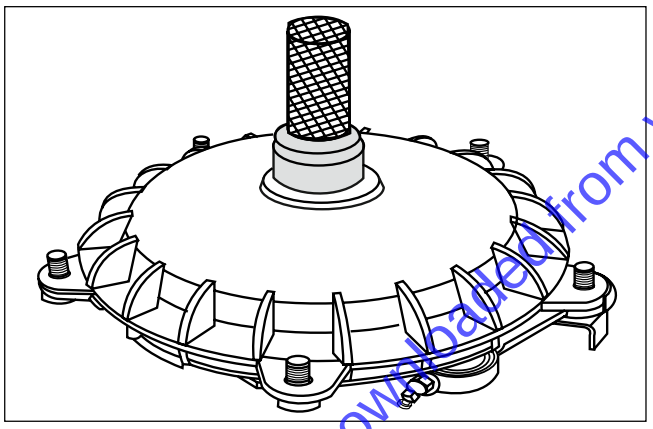


Removal of Needle roller bearing

- Remove the Circlip locking ball bearing from Front brake drum. Tap out ball bearing with the help of suitable punch.

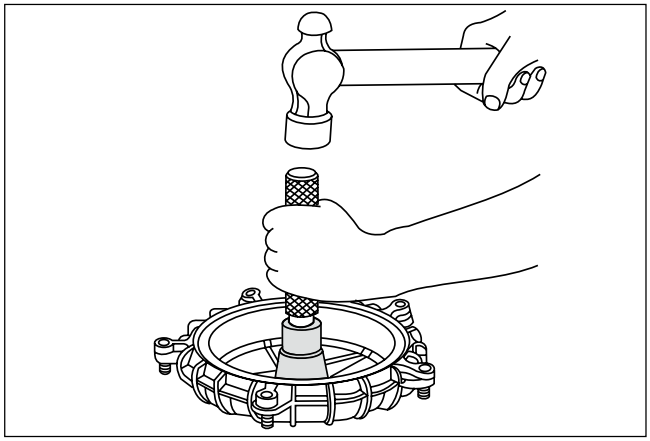
FRONT BRAKE DRUM ASSEMBLY:

- Fit the ball bearing on Front brake drum by using suitable outer driver from bearing driver set (P.No. 37103061) and inner driver (P.No. 37101413).



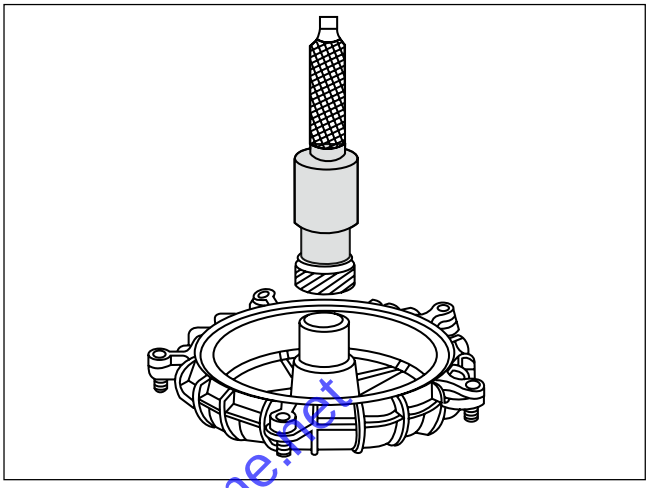
Assembling of Ball bearing

- Fit Circlip, locking ball bearing.
- Use suitable punch from bearing driver set for fitting Needle roller bearing in Front brake drum assembly,



Assembling of Needle roller bearing

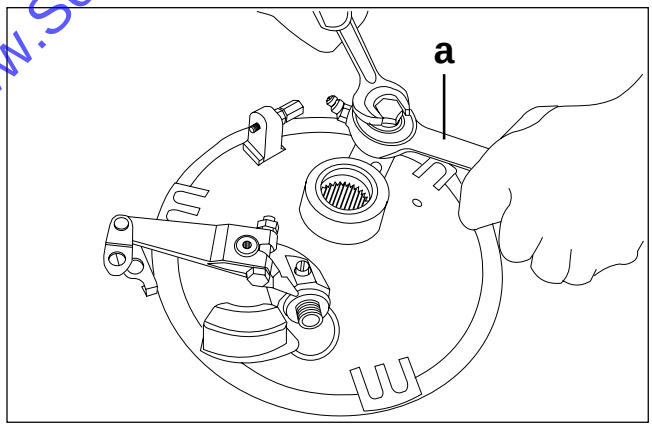
- While fitting Speedometer gear and Spacer on Front brake drum use Special Tool - Outer driver (P. No. 37 1519 04). Metallic portion of Speedometer should face downward while assembling.This tool consists of three parts i.e. a punch, a socket head screw and a locating plug.



Assembling of Speedometer gear and Spacer

FRONT BRAKE PANEL DISMANTLING:

- Remove bolt connecting the antidive link with front brake panel.



Removal of Antidive link (a)

- Remove spring lock and then remove brake shoe.
- Remove actuating lever along with indicator and '0' ring by removing bolt and nut .
- Remove actuating shaft .
- Remove needle roller bearing by using suitable punch from bearing driver set (P. No. 371030 61).

DISMANTLING OF ANTIDIVE LINK AFTER REMOVING FROM FRONT BRAKE PANEL:

- Remove grease nipples .
- Remove 'O' rings , small bushes and using suitable punch from bearing driver set (P.No. 371030 61), remove big bushes .

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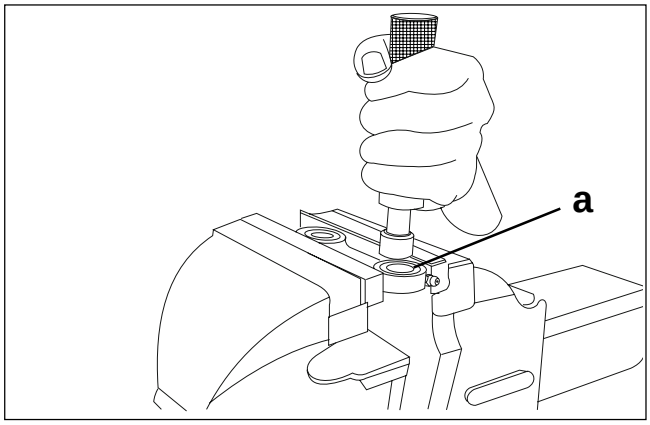
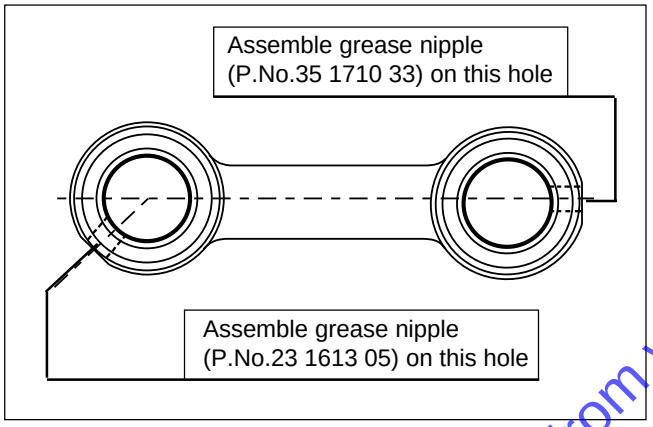


Removal of Big bushes (a) of Antidive kink

ANTIDIVE LINK ASSEMBLY:

- Assemble 'L' type grease nipple at one end of link and other type of grease nipple at other end of link as shown in sketch.

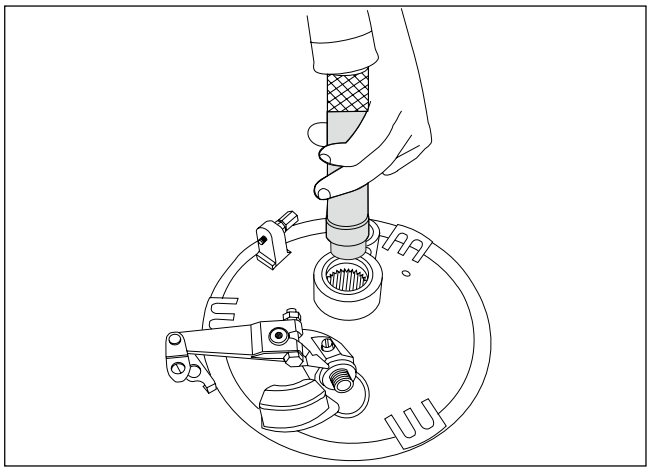


Link assly.

- Press big bushes using suitable punch from bearing driver set (P.No. 37103061) and then assemble small bushes, 'O' rings and cup washers on link.

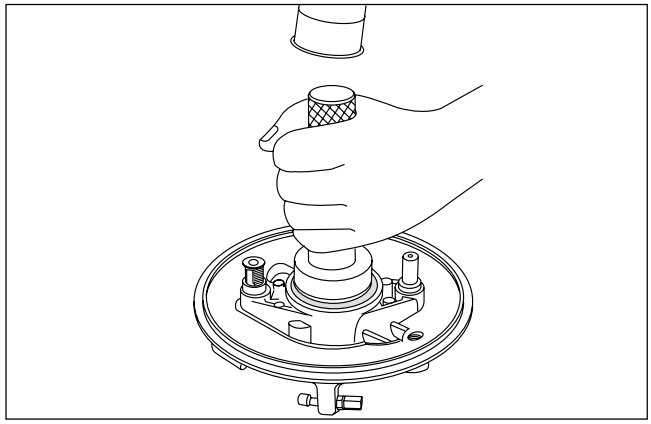
FRONT BRAKE PANEL ASSEMBLY:

- Using suitable punch from bearing driver set (P. No.37 1030 61) punch Needle roller bearings into Front Brake panel . Apply grease to Needle roller bearings.



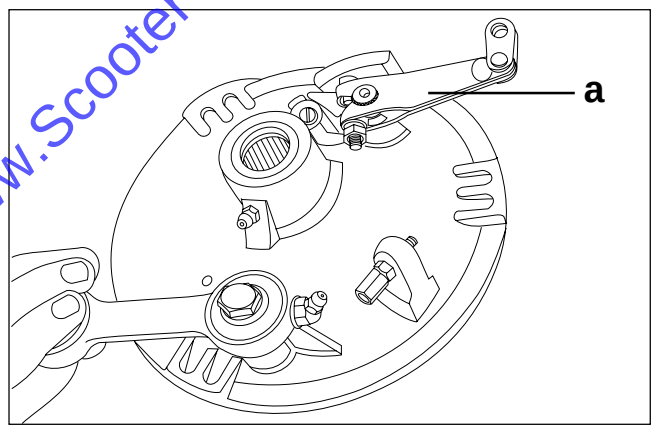
Refitting of Needle roller bearing

- Using suitable punch from bearing driver set punch Grease seal into Front brake panel.



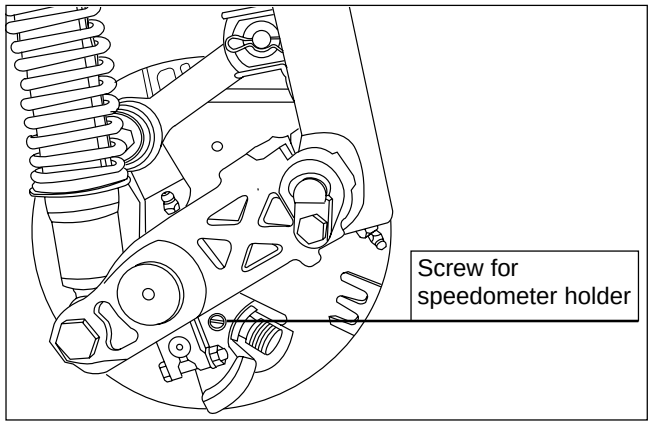
Assembly of Grease seal

- Assemble Grease nipple on Front brake panel.
- Insert Front brake Actuating shaft assly into Front brake panel.
- Assemble 'O' ring & Indicator into Actuating shaft and fit Actuating lever into Actuating shaft by Bolt & Nut.



Assembly of Actuating lever (a)

- Facing paint mark upward, assemble Front brake shoe into Front brake panel. Fit spring lock. This is done to have proper positioning of Leading and Trailing Brake shoe.
- Assemble Speedometer pinion alongwith support into Front brake panel with screw. 'O' ring should be fixed on support.



Assembly of Speedometer holder

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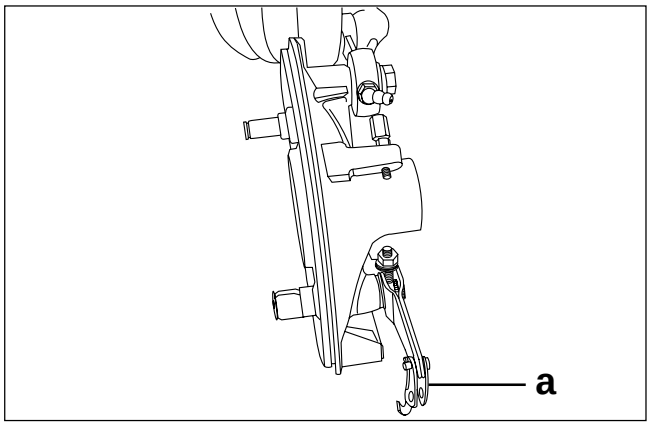
- Assemble Front brake cable adjuster into Front brake panel.
- Assemble Brake links on Actuating lever by Split pin.
- Assemble antidive link end having 'L' type grease nipple on brake panel by bolt alongwith flexible washer . It should be assembled such that it should have easy access while greasing.



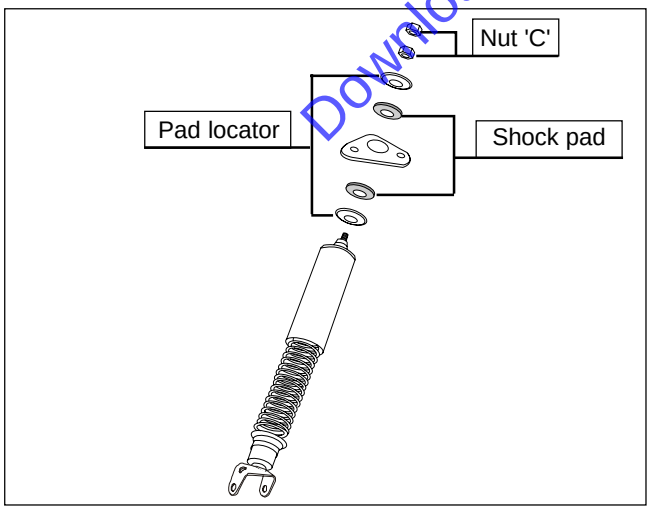
Assembly of Brake links (a)

DISMANTLING OF FRONT SHOCK ABSORBER

- Remove two nuts (c) holding Front shock absorber upper mounting bracket .
- Remove the Shock pads & Pad locators.
- Remove nut holding spring and then remove front suspension spring .

FRONT SHOCK ABSORBER ASSEMBLY:

- Assemble front suspension spring on front shock absorber such that its lower pitch side face downwards and then tighten the nut.
- Assemble shock pads & pad locators on front shock absorber and then tighten with the nuts.



Assembly of Front shock absorber

REMOVAL OF ENGINE FROM VEHICLE :

- Put the vehicle on the stand , open seat lock & lift seat and remove both LH and RH bonnets.
- Drain Engine oil completely by removing drain plug.
- Disconnect lower ends of rear brake & clutch cable.
- Remove gear shifter cover and release lower ends of gear cables by unscrewing screw terminals.
- Disconnect magneto harness coupler from main harness. Also remove body earthing screw on fan cover & remove earthing cable.
- Disconnect choke and throttle cable from carburettor.
- Disconnect duct from carburettor. Disconnect carburettor from intake manifold. Disconnect fuel pipe and sensing pipe.
- Remove bolt fixing lower end of rear shock absorber to the engine.
- Hold engine carefully & remove the bolt fixing c,case arm with engine mounting link on chassis.
- Take out the engine carefully from the chassis.

CHASSIS ASSEMBLY

- Assemble various grommets on chassis in respective holes i.e. grommets for petrol pipes, tail lamp, control cables etc.
- Fix plug for bonnet on LH and RH side of chassis.
- Insert 2 bolts alongwith plain washer from front side of shield in the holes for L. box Fit plain washer, spring washer and on each bolt and tighten it.
- Pre-fit shield beading on shield on the shield by light hammering by rubber mallet
- Press fit the beading by using special tool.
- Insert 4 bolts for stand mounting and Position stand on chassis and insert stand clip LH and RH on the bolts. Prefix 4 nuts spring washers and tighten them.
- Assemble hook plate on chassis and assemble stand spring.
- Insert wiring harness into the chassis from front side (Near steering hsg. side)
- Take out the harness branches for LH and RH control switches, head lamp and instrument panel from the cavity of the chassis.
- Take out harness branch for brake switch from the hole on chassis near brake pedal mounting.
- Insert tail lamp wiring harness through diaphragm hole. Route the harness along LH side of diaphragm and take it out from hole on rear end of chassis.
- Take out harness branch for regulator and CDI unit through hole on LH side of chassis.
- Take out harness branch for stator from hole on RH side of chassis.
- Align hook with chassis holes and fix it with 2 Nos of screws alongwith plain, spring washers and nuts.
- Insert control cables i.e. Accelerator cable, Gear cables and choke cables from upper terminal in proper position.
- Fix cap for upper terminal.
- Assemble handle for Engine bonnet and LH bonnet with spring, plain washer and nylock nut on LH and RH side of chassis.

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SERVICE DATA (CHASSIS)

SR.NO.	DESCRIPTION	STANDARD	REMARK
1	**WHEEL RIM RUN-OUT:**		
	Axial	0.5 mm	Service limit : 2.0 mm
	Radial	0.5 mm	Service limit : 2.0 mm
2	**BRAKE DRUM INSIDE DIAMETER:**		
	Front	150.16 mm	Service limit : 151.00 mm
	Rear	130.16 mm	Service limit : 131.00 mm
3	**BRAKE SHOE LINING THICKNESS**		
	Front	4.03 mm	Service limit : 2.5 mm
	Rear	4.03 mm	Service limit : 2.5 mm
4	**BRAKE ACTUATING SHAFT DIAMETER :**		
	Front	12.925-12.968 mm	
	Rear	11.957-11.984 mm	
5	**BRAKE ACTUATING SHAFT HOLE DIAMETER :**		
	Front	13.043 mm	
	Rear	12.027 mm	
6	**BRAKE SHOE SPRING FREE LENGTH :**		
	Front	44.00 - 46.00 mm	
	Rear	31.50 - 33.50 mm	
7	**TIRE PRESSURE**		
	Front	1.25 kg/cm^2 (18 PSI)	
	Rear (Without pillion)	1.75 kg/cm^2 (25 PSI)	
	Rear (With pillion)	2.50 kg/cm^2 (36 PSI)	
8	**FREE PLAY**		
	Clutch lever play	3.0 - 5.0 mm	
	Front brake lever play	3.0 - 5.0 mm	
	Rear brake pedal play	10.0 -15.0 mm	

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ELECTRICALS : MAINTENANCE & CHECKING

GENERAL PRECAUTIONS :

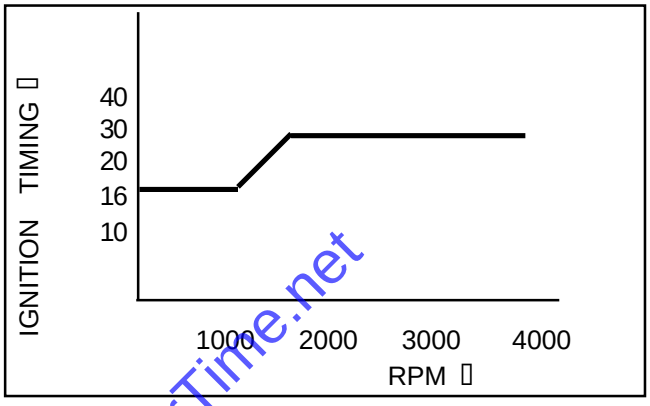
There are some important precautions to be taken while servicing electrical system. Please follow them.

- Do not reverse the battery lead connections. This will burn out the diodes in the electrical parts.
- Always check battery condition before condemning other parts of an electrical system. A fully charged battery is a must for conducting accurate electrical system tests.
- The electrical parts should never be struck sharply, as with a hammer, or allowed to fall on a hard surface. Such a shock to the parts can damage them.
- To prevent damage to electrical parts, do not disconnect the battery leads or any other electrical connections when the ignition switch is on, or the engine is running.
- Do not use a meter illumination bulb rated for other than the voltage or wattage specified in the wiring diagram, as the meter or gauge panel could be warped by excessive heat radiated from the bulb.
- Take care not to short the leads that are directly connected to the battery positive (+) terminal to the chassis ground.
- Never replace a defective part without determining what CAUSED the failure. If the failure was caused by some other item or items, they too must be repaired or replaced, or the new replacement will soon fail again .
- Make sure all connectors in the circuit are clean and tight, and examine wires for signs of burning, fraying, etc. Poor wires and bad connections will affect electrical system operation.
- Measure coil and winding resistance when the part is at room temperature.
- Colour codes :

Code	Colour	Code	Colour
B	Black	Br	Brown
G	Green	Gr	Grey
L	Blue	Lg	Light Green
O	Orange	R	Red
W	White	Y	Yellow
B/Y	Black/Yellow	R/W	Red/White
L/W	Blue/White	W/G	White/Green
Y/R	Yellow/Red	B/W	Black/White
W/R	White/Red	R/B	Red/Black
R/Y	Red/Yellow		

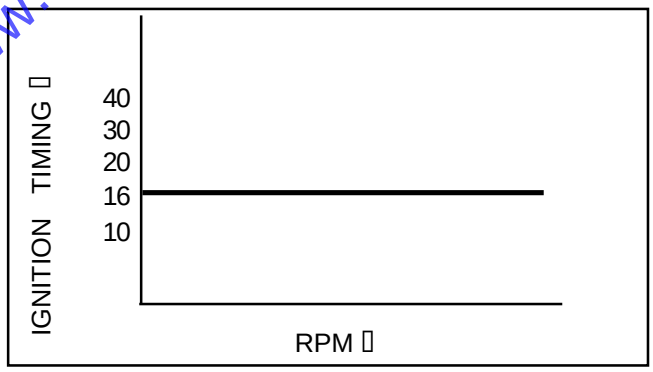
THROTTLE REGULATED IGNITION CONTROL SYSTEM (TRICS)

In 'TRICS', Ignition timing varies as per throttle opening. Below half throttle, ignition timing changes from 16^0 to 30^0 in proportion to engine rpm. Refer graph1.



IGNITION TIMING BELOW HALF THROTTLE

After half throttle ignition timing changes to 16^0 irrespective of engine rpm. Refer graph 2.



IGNITION TIMING AFTER HALF THROTTLE

Details of modifications in various parts are as under.

A) **Throttle sensor :** Throttle sensor is provided in Handle bar. A signal is passed to C.D.I.Unit with the help of this sensor as per position of throttle.

B) **Gas control link :** Gas control link is modified .

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CHECKING PROCEDURES

A) CONTROL SWITCHES

Control switch LH

a) Dipper Switch (When Head light is ON)

Position	Colour		
	Brown/ Blue	Yellow/Red	Violet
Hi	●	●	
Low		●	●

b) Horn Switch

Position	Colour	
	Black	White
ON (Pressed)	●	●
OFF	○	○

Control switch RH

a) Side Indicator Switch

Position	Colour		
	Green/White	Grey/Red	Blue/White
RH	●	●	○
N	○	○	○
LH	○	●	●

b) Start Button

Position	Colour	
	Red	Red/Yellow
ON (Pressed)	●	●
OFF	○	○

B) FRONT & REAR BRAKE SWITCHES :

Disconnect the two terminals of the front or rear brake switch and connect an ohmmeter between the two terminals setting it on x 10 ohms range. When the switch is pressed the ohmmeter should show infinity (∞) and when switch is released the ohmmeter should show 0 ohms.
If not showing above readings replace brake switch.

Range	Connection	Switch position	Reading
x10 ohms	Red	Switch pressed	∞
	Blue	Switch released	0 ohms

C) STEERING CUM IGNITION SWITCH

Connect the +ve meter lead to Red cable and -ve meter lead to Black cable. Check continuity (0 ohms) as given below:

Switch position	Black/ Yellow	Violet	Red/ White	Red
Ignition OFF (steering lock)	●	●	○	○
Ignition OFF (steering unlock)	●	●	○	○
Ignition ON (steering unlock)	○	○	●	●

D) H.T. COIL

To measure the H.T.Coil resistance on the vehicle, remove the spark plug cap from spark plug lead and test as per table. Take both reading i.e. primary and secondary with respect to ground.

	Meter	Reading
Primary winding	x 1 ohms	0.9 to 1.1 ohms
Secondary winding	x 1 k ohms	6.5 to 7.5 K ohms

E) COILS ON STATOR PLATE ASSLY

Use the Hand Tester (37 1030 63) for checking the resistance across the coils.

1) Lighting Coil

First connect the + ve meter lead to Green cable and - ve meter lead to Black (earth). The resistance value should be as tabulated below.:

Range	Connection		Reading
	Meter +ve	Meter -ve	
x1 ohms	Green	Black	0.5 to 0.8 ohms

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2) Charging Coil

First connect the + ve meter lead to Violet cable and - ve meter lead to Black (earth). The resistance value should be as tabulated below.:

Range	Connection		Reading
	Meter +ve	Meter -ve	
x10 ohms	Violet	Black	245 to 295 ohms

3) Pulser Coil

First connect the + ve meter lead to Grey cable and - ve meter lead to Black (earth). The resistance value should be as tabulated below.:

Range	Connection		Reading
	Meter +ve	Meter -ve	
x10 ohms	Grey	Black	108 to 132 ohms

4) Battery Charging Coil

First connect the + ve meter lead to Orange cable and - ve meter lead to Blue/Red. The resistance value should be as tabulated below.:

Range	Connection		Reading
	Meter +ve	Meter -ve	
x10 ohms	Yellow	Yellow/Red	0.65 to 0.95 ohms

5) Insulation Check (ForLighting,Horn,Battery Charging coils & Charging coils) : To check whether coil is body short

Note : Disconnect wire connected to earth for lighting & charging coil before conducting insulation check.

Range	Connection		Reading
	Meter +ve	Meter -ve	
x1 K ohms	Core (Remove varnish from core to have proper contact	Either one of terminal	>200 K ohms

F) DC VOLTAGE REGULATOR

DC Voltage Measurement :

- Connect +ve lead of meter to +ve terminal of Battery and - ve terminal of meter to - ve terminal of Battery.
- Ensure that all lights are off.
- Start the Engine, set it at 3500 RPM .
- Measure the Battery terminal voltage.

LOAD	METER	READING AT 4500 RPM
OFF	DC 25 V	14.7 ±1V

Note : Use fully charged Battery (specific gravity of electrolyte = 1.24)

G) BATTERY CHARGING SYSTEM

- Ensure that battery is fully charged.
- Set meter range at 20 A DC
- Remove fuse & connect meter +ve lead to other terminal of fuse i.e. Red / White wire coming from DC Regulator and meter - ve lead to Red wire coming from battery +ve terminal.
- All DC load viz. Brake lights and Side indicator bulbs are to be switched OFF.
- Start the Engine. Set the Engine RPM at 3500 RPM.
- Measure Battery charging current. It should be 1.0 to 3.0 amps i.e. current must flow into the Battery.

Range	Connection		Reading
	Meter +ve	Meter -ve	
20A DC	Red/White	Red	1.0 to 3.0A

- Stop the Engine. Disconnect the meter and reconnect the fuse.
- As a further check, set meter range at 25 V DC.
- Connect +ve lead of meter to +ve terminals of Battery and - ve terminal of meter to - ve terminal of Battery.
- Ensure that all lights are off.
- Start the Engine.
- As the RPM of engine increases, voltage will also increase. Measure the Battery terminal voltage at 3500 RPM.

Range	Connection		Reading
	Meter +ve	Meter -ve	
25V DC	Battery +ve	Battery +ve	14.7±1 V

Note : Use fully charged Battery (specific gravity of electrolyte = 1.24)

H) TURN SIGNAL RELAY

Remove the flasher unit which is to be checked and connect it to another vehicle whose flasher unit and side indicators are working properly. Check that the terminals are connected correctly. Start the vehicle and put ON the indicator switch and see if the flasher unit functions or not. If flasher unit works properly then there may be some problem with the switch or regulator or with the wiring of the vehicle whose flasher unit is being checked.

Also check flash rate (No.of flashes/min). If flash rate is not within the specified limit i.e.90 ±30 flashes / min, replace it as it is faulty.

If right or left signal gets ON, check that the blinker bulbs are Ok.

I) FUEL LEVEL GAUGE (TANK UNIT)

For knowing the quantity of fuel inside the fuel tank at a glance, fuel gauge is provided on an instrument panel. The fuel gauge works on the principle of 'variable resistance'. The fuel gauge works on A.C. supply.
The fuel gauge consists of a float for level sensing, a sender for sending the signal and the gauge for converting

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the signals from sender into the movement of needle.

Checking of Fuel Tank Unit:

Connection	Tank (float)	Reading
White/Black \ Meter x10 ohms / Black	Fuel(Full) (Highest position) Fuel(Empty) (Lowest position)	1.0 to 5.0 ohms 103 to 117 ohms

J) DC Voltage Measurement :

- Connect +ve lead of meter to Orange wire and -ve lead of meter to Orange/Brown wire from AC/DC unit.
- Start the engine and set it at 3500 rpm.
- Press the Horn button.
- Measure the DC Voltage at 3500 rpm.

Range	Connection		Reading
	Meter +ve	Meter -ve	
25V DC	Orange	Orange/Brown	9 to 13 V

K) DC HORN

1) Tuning of DC Horn :

- Check the Horn sound. If it is weak or feeble, loose the check nut provided at the back of Horn.
- With the help of screw driver, rotate the screw till the horn sound is good.
- After proper tune up, hold the screw & lock the checknut .

2) DC Current Measurement :

- Remove the Orange wire from Horn & connect one lead of meter to Orange wire and other lead of meter to horn terminal from which Orange wire is removed.
- Start the engine and set it at 3500 rpm.
- Press the Horn button.
- Measure the Current at 3500 rpm.

Range	Connection		Reading
	Meter +ve	Meter -ve	
20A DC	Orange	Horn Terminal	1.5 A max.

L) SPARK PLUG CAP (RESISTIVE)

- Remove H.T. cable from Spark plug cap.
- Connect +ve lead of meter to Spark plug cap where H.T. cable is connected and -ve lead of meter inside cap where spark plug is fitted.
- Measure the resistance across the spark plug cap.

Range	Connection		Reading
	Meter +ve	Meter -ve	
x1K ohms	Where H.T. cable is connected	Where Spark plug is fitted	4.0 to 6.5 K ohms

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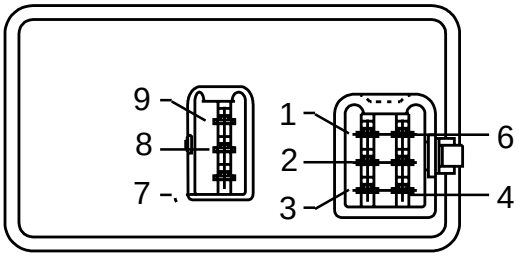
M) C.D.I. UNIT (With 'TRICS')



METER RANGE X 10 W		METER NEGATIVE (-VE) LEAD CONNECTION							
		1	2	3	4	6	7	8	9
METER POSITIVE (+VE) LEAD CONNECTION	1		×	×	40 ~ 60 W	×	×	×	0
	2	250 ~ 400 W		40 ~ 60 W	×	×	×	×	250 ~ 400 W
	3	40 ~ 60 W	×		250 ~ 400 W	×	×	×	40 ~ 60 W
	4	×	×	×		×	×	×	×
	6	×	×	×	×		×	×	×
	7	×	×	×	×	×		×	×
	8	×	×	×	×	×	×		×
	9	0	×	×	40 ~ 60 W	×	×	×	

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CHECKING PROCEDURE FOR SELF STARTER

On vehicles with button start, a 12V motor is used to crank the engine instead of a kick, when button is pressed.

The starter motor draws it current from a 12V - 9 AH battery through a relay (solenoid switch).

The solenoid switch (relay) is energized by pressing starter button (Vehicle should be in neutral gear). When the relay gets energized it connects battery to starter motor.

The supply of current to starter button is routed through ignition switch. Hence the motor will run only when the ignition switch is ON.

A battery charging coil on stator plate supplies A.C. charging current to regulator. It converts it into D.C. and charges the battery continuously when engine is running. A 10 Amp fuse is provided for safety.

Thus with ignition switch in ON position, vehicle in neutral gear; the current flows through relay when starter button is pressed.

Starter motor is energised which engages the pinion to ring gear on flywheel and the starting shock is absorbed by spring.

Upon engaging the ring gear rotates with magneto rotor and engine starts.

Once the engine starts, ring gear rpm becomes more than the pinion and pinion is forced back to its rest position.

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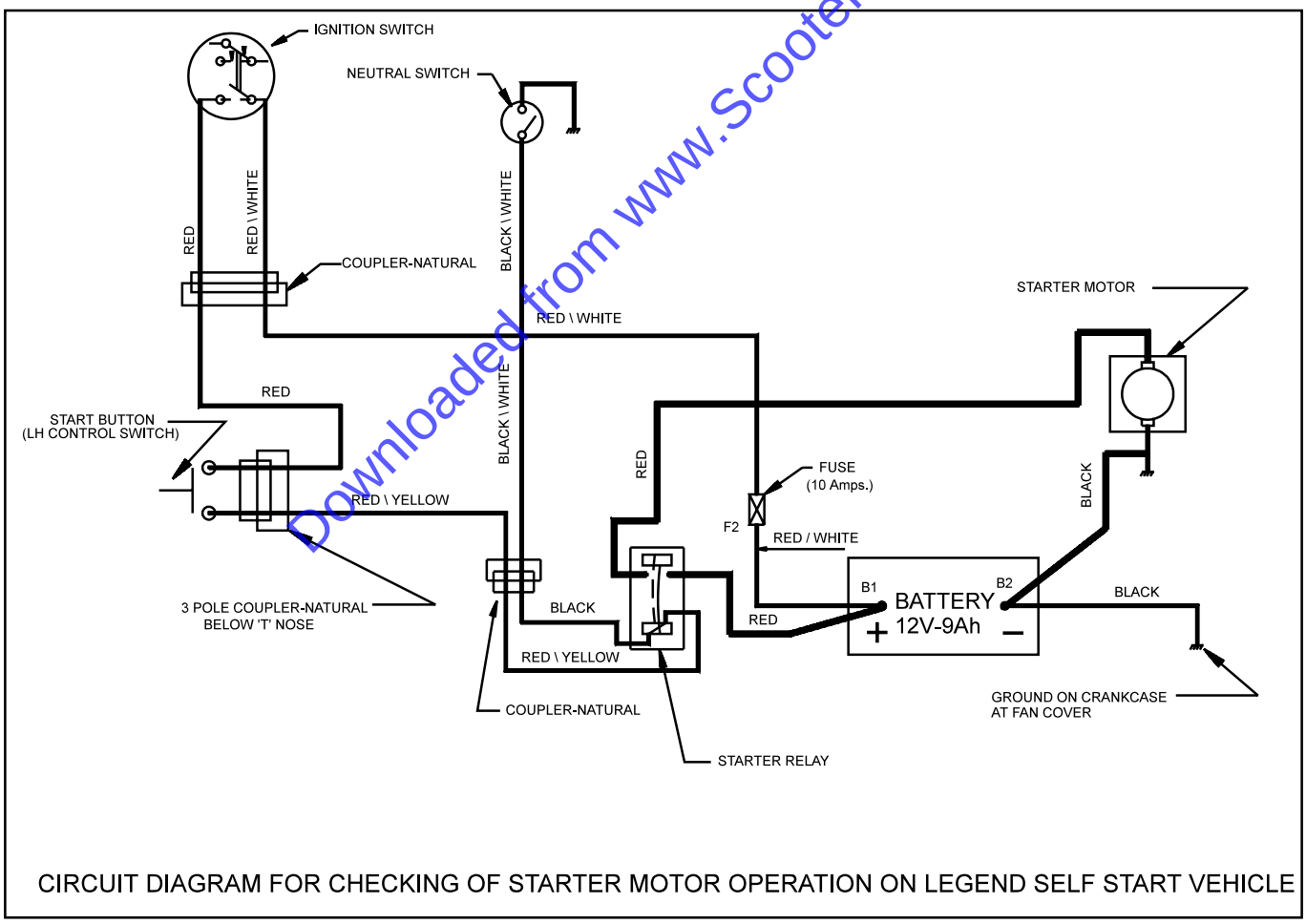


CIRCUIT DIAGRAM FOR CHECKING OF STARTER MOTOR OPERATION ON LEGEND SELF START VEHICLE

BATTERY

TECHNICAL SPECIFICATION :

Make, voltage & type	: Exide,12V MX 9-B
Capacity	: 9 AH
Specific gravity of electrolyte for initial filling of new battery	: 1.24 for use above 10°C
Specific gravity of electrolyte for initial filling of new battery	: 1.28 for use below 10°C
Electrolyte volume	: 0.50 litres
Initial charging duration	: 8 ~ 12 hrs
Initial charging current	: 0.9 to 1.0 A

INITIAL CHARGING PROCEDURE :

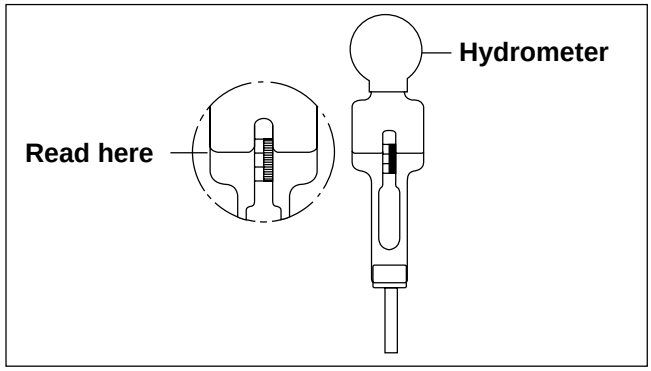
1) Pull of the short plastic tube on the exhaust vent outlet and replace it with the long open tube provided with battery.
2) Do not crimp or bend the exhaust tube. This is a safety device to remove fumes. Blockage of this tube is liable to cause an explosion.
3) Fill each cell with dilute sulfuric acid of the correct specific gravity (1.24 at room temp. for use above 10°C and 1.28 at room temp. for use below 10°C).
4) Allow the battery after filling to stand for half an hour.
5) Keep vent plugs open. Connect battery to charger (P.No. 37 20 3102) and charge at 0.9.
6) Charge continuously for 8 to 12 hours taking specific gravity readings every hour. Fully charged condition is indicated when all cells are gassing freely and evenly and show no rise in specific gravity over 3 successive readings.
7) After charging push vent plugs firmly into place and wash off acid spillage with water and dry the battery.

CHECKING THE SPECIFIC GRAVITY :

The charge condition of the individual cell can be checked by measuring specific gravity of electrolyte in that cell. The specific gravity of electrolyte can be checked by using Hydrometer having small diameter spout. Such a Hydrometer is available in Spare Part Dept. or can be directly procured from market .

For measuring the specific gravity bring the electrolyte in the Hydrometer to eye level, and read the graduations on the float scale bordering on the lower meniscus (i.e. curved down portion of electrolyte surface) as shown in the figure.

Specific gravity of fully charged Battery, at 27^0C (Room Temperature)
: 1.23 to 1.24 in Tropical climate
: 1.27 to 1.28 in Cold climate

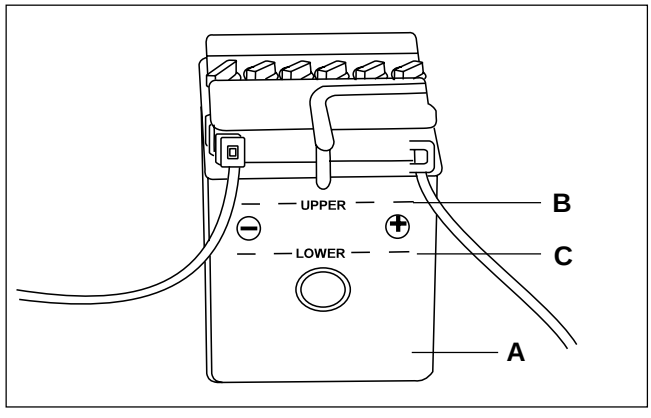


Checking battery specific gravity

After charging is over, fit the filling caps, Wash acid spillage with water. Dry the battery. Ensure terminals are clean. Install the battery on vehicle as described below:-

BATTERY INSTALLATION :

a) Ensure that in all six cells the level of electrolyte is near the maximum level mark.
b) To clean & dry the surface wipe the top of the battery with a clean cloth. Install the battery on its rubber seat. Fasten the battery firmly with the band.
c) Connect cables to the positive and negative terminals properly. Reverse connections will damage the charging system permanently since the DC Regulator may get damaged due to excessive current in the reverse direction.
d) Always connect the “negative (earthing) terminal last”.
e) Clean the battery terminals and cable connections. Smear them with petroleum jelly to avoid corrosion (NEVER USE ORDINARY GREASE) .
f) Route the battery exhaust tube properly. Do not fold or crimp as it may cause explosion of the battery.
g) Check that the battery cables connections are firm and cables do not rub against any metal components.



Electrolyte level inspection
A - Battery B - Upper level C - Lower level

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BATTERY MAINTENANCE :

For the optimum performance and longer battery life the maintenance of battery is important. The condition of the battery should be checked at least once in a month as follows :-

a) Always keep the battery clean and dry.
b) Visually inspect the surface of the battery container. If there are any signs of cracking or electrolyte leakage from battery, replace the battery.
c) Battery electrolyte level inspection—The electrolyte level inside all the six cells should be checked fort-nightly and topped up if necessary as per procedure given below:-

i) Remove LH side cover. Remove battery holding band. Remove battery after removing cables.
ii) Check whether the electrolyte level of each cell is between the upper and lower level lines. If the level is low in any of the cells then top-up with dis- tilled water as follows :

- Remove the battery from vehicle.
- Remove filling caps fill distilled water until electrolyte level in each cell reaches upper level .

"NEVER ADD ACID OR ORDINARY TAP WATER FOR TOPPING UP SINCE THIS WILL SHORTEN BATTERY LIFE".

- ALWAYS KEEP THE EXHAUST TUBE FREE FROM OBSTRUCTIONS.

NON-USE MAINTENANCE :

When the vehicle is likely to remain off-road for a longer time (say more than a month) then non-use maintenance should be carried out as follows otherwise the battery may get sulphated and permanently damaged.

a) Remove the battery from vehicle.
b) Maintain electrolyte at "UPPER LEVEL".
c) During off service period, battery should be charged once a month.
d) Keep the battery fully charged.
e) Store the battery in cool, dry place.
f) Keep the battery away from rain, dew, moisture and direct sunlight.

BATTERY SULPHATION :

A sulphated battery is one which has been left standing in a discharged condition or undercharged to the point where abnormal lead sulphate has formed on the plates (Sulphated cells looks like white crystal like sugar). Where this happens, the chemical reactions within the battery are affected and results in loss of capacity. Mostly the causes of sulphation are as under :-

a) Undercharging.
b) Standing in a partially or completely discharged condition for long time.
c) Low electrolyte level: if electrolyte level is permitted to fall below the top of the battery plates, then the exposed surfaces will harden and will become sulphated.
d) Adding acid:if acid is added to-a cell in which sulphation exists the condition will be aggravated.
e) High specific gravity:if specific gravity is higher than the recommended value, then sulphation may occur.
f) High temperature : high temperature accelerates sulphation, particularly of an idle, partially discharged battery.

Voltage of the sulphated battery :-

Cells of the sulphated battery will show low specific gravity . Follow the procedure given below.

i) Check voltage before charging.
ii) Charge for 2 hours.
iii) Check voltage every one hour. If voltage increases then continue charging. But if voltage does not increase the discontinue charging otherwise battery charger will get permanently damaged.

If battery is not badly sulphated (i.e. voltage more than 9 volts), then battery can be revived by special treatment. In such case it is advisable to give sulphated battery to battery specialists for necessary special treatment.

HOW TO DETERMINE CONDITION OF BATTERY :

Specific gravity check :- Whether battery is fully charged or partially charged, it will always show same "no load voltage" of 12 volts or more (unless battery cells are damaged due to sulphation etc). But specific gravity of the fully charged battery and partially charged battery will be different. Fully charged battery will show specific gravity of 1.240 in tropical climate and 1.28 in cold climate while partially charged battery will show less specific gravity. Therefore, specific gravity check is very important to know condition of the battery.

SAFETY :

Never bring the naked flame or spark such as a candle, lighted cigarette etc. near the battery, especially during or shortly after charge. Battery charging room should be well ventilated -

NOTE : These are general guidelines.

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TROUBLE SHOOTING FOR STARTER MOTOR :

COMPLAINT	STEPS FOR CHECKING	CAUSE AND CORRECTIVE ACTION
Starter Motor not working.	**A)** Ensure that the battery is fully charged. Check Specific gravity of electrolyte in each cell. It should be as specified **B)** Fuse (10A) to be intact. **C)** All terminal screws/nuts at the starter motor. Earthing point on the engine,battery starter relay and the neutral switch should be clean and tightened adequately. **D)** Ignition switch must be in 'ON' position and engine kill switch in run position. **E)** Start button pressed.	
	1.1 Check for 12 V D.C. supply at the starter motor terminal S+ with a voltmeter (VM) D.C. Range. 25V.	**1.1.1** No response indicates that 12 V D.C. supply is not available at the starter motor (S.M.) terminal S+. The starter circuit needs to be checked. Refer clause 1.2 below. **1.1.2** If the V.M. indicates 12V.D.C . supply at the S.M. Terminal S+, then the S.M. is faulty. **1.1.3** To cross check connect battery +VE terminal B1 directly to the S.M. +VE terminal S+ with a 6 mm^2 cable. If the S.M. does not respond then it should be replaced.
	1.2 If the S.M. is checked as per 1.1.1 and no supply is available at the S+ terminal then cover the following steps. Hear for click noise of the starter relay while pressing starter button. a) Refer 1.2.1 & 1.2.2 if click noise comes b) Refer 1.3 if click noise does not come	**1.2.1** If the click noise is present it indicates that the relay is operating but there is no output from the Relay. Check for 12VD.C. supply between the input (R1) of the Relay and chassis ground. (Start button not pressed) If the supply is present then the cover the following steps. **1.2.2** Check for 12V DC supply between R2 and Ground. If the supply is present, Check for voltage drop between R1 & R2. If the drop is more than 2V, (start button pressed) then relay is faulty, replace the same. To cross check, refer 1.1.3. If starter motor is ok, check continuity of wire from relay to starter motor.

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COMPLAINT	STEPS FOR CHECKING	CAUSE AND CORRECTIVE ACTION
	1.3 Relay operation not present (click noise of Relay operation not heard)	**1.3.1** Check for 12 V.D.C. supply at the Relay coil terminals (Soldered points C1 and C2 : Ref circuit diagram). If the supply is indicated on the V.M. then the Starter Relay is faulty. Replace the same. **1.3.2** If the 12 V.D.C.supply is not indicated on the V.M. then check for the supply between point C1 and chassis ground. If supply is indicated on the V.M. then it indicates that the point C2 is not getting grounded properly through the neutral switch. (Refer clause 1.4 below.) **1.3.3** If the V.M. doesn't show 12 V.D.C. supply between C1 and chassis ground then it indicates that the battery supply is not reaching the relay coil terminal C1.To cross check connect the battery +ve B1 to C1 directly by a1 Sq.mm cable. If the S.M. responds then check for the control circuit as follows. **1.3.4** Ensure the 10 A fuse in the fuse holder is intact. **1.3.5** Check for 12V DC supply between Red / White wire in the coupler for Ignition Switch and chassis ground. If the meter does not show supply then cable from fuse to the Ignition switch coupler may be open. (To cross check, check for continuity between Red / White wire in switch coupler and point F2). If 12V DC is indicated on the meter, check for 12V DC supply between the Red wire in the Ignition switch coupler and chassis ground. If there is no supply then the Ignition switch is faulty. Replace the same. **1.3.6.** If the Voltmeter indicate 12V DC supply, then ensure proper fitment of the 3 pole natural coupler below the 'T' nose . If both are OK then check for proper functioning of the start button as follows : **1.3.7** Remove the 2 screws of the L.H. control switch. Check for 12 V.D.C. supply between the soldered Terminal (red wire) and chassis ground (Starter button not pressed). The V.M. should indicate 12V D.C. supply if the above clauses 1.3.4 and 1.3.5 are OK. **1.3.8** Keeping the start button pressed check for the 12 V.D.C. supply between the red/yellow and chassis ground. If the V.M. does not indicate supply then it implies that the start button is faulty. Replace the same.

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COMPLAINT	STEPS FOR CHECKING	CAUSE AND CORRECTIVE ACTION
	1.4 Neutral switch checking.	**1.4.1** Adjust continuity range on a multimeter. Connect the multimeter across the neutral switch with one probe on the switch terminal (black wire) and the other probe on the gear shifter. If continuity is not observed then it indicates that the neutral switch may be faulty. Take the following steps. **1.4.2** Remove the neutral switch from the Gear shifter housing. Check whether there is any oil layer on the plunger of the switch. Clean it and again check for continuity. If there is no continuity then the neutral switch is faulty. Replace the same. **1.4.3** If continuity is observed then check whether the plunger of the switch has got compressed and as such is not making contact with the Gear Shifter. In that case also replace the switch.
Armature fails to rotate or rotates slowly and the starter does not crank the engine though pinion has engaged with ring gear.	**a)** Discharged battery / Defective battery **b)** Relay drop high. **c)** Loose or oxidized battery terminals/ corroded or loose defective earth connections. **d)** Brushes wornout and not making proper contact with commutator. **e)** Dirty, oily or badly burnt commutator **f)** Bush worn out. **g)** Armature defective.	Substitute with a fully charged battery. If the starter now cranks the engine, then the battery must be attended to. Repair / Replace relay. Clean the terminal and smear petroleum jelly. Tighten all connections. Replace brushes, if found to be wornout. Remove dirt or oil. If commutator is burnt, replace armature. Replace bush bearing. Replace armature.
Armature rotates but pinion fails to engage.	**a)** Pinion movement sticky. **b)** Heavily burred pinion or ring gear.	Lubricate pinion and shaft helix with light oil. Deburr by filing and clean up.
Armature rotates, pinion engages with the ring gear but the engine is not cranked. (A whining noise is heard).	Drive slip	Remove the starter from the vehicle and replace drive assly., test and refit the starter.
Starter continues to run after the switch is released.	**a)** Sticky push button switch. **b)** Sticky relay **c)** Bush in pinion seized on shaft. **d)** Pinion/Ring gear fouled or damaged.	Tap on bush button switch to release if not disconnect battery. Disconnect battery, repair or replace relay. Remove the starter from the vehicle and replace bush. Clean thoroughly deburring pinion & ring gear by filing.

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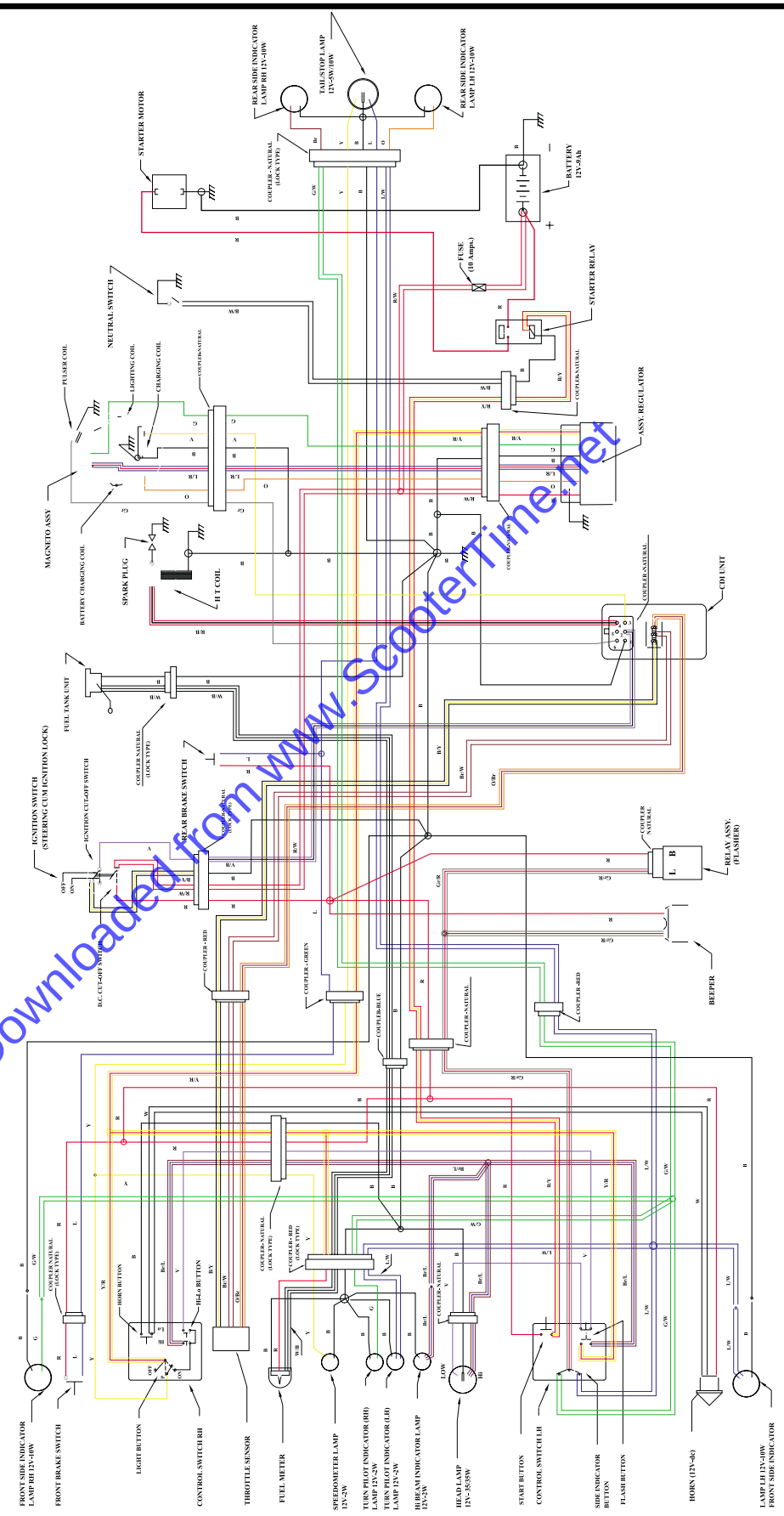
WIRING DIAGRAM FOR LEGEND (WITH SELF START)

(FOR THROTTLE REGULATED IGNITION CONTROL SYSTEM - TRICS)


FRONT SIDE INDICATOR LAMP RH 12V-10W
FRONT BRAKE SWITCH
LIGHT BUTTON
CONTROL SWITCH RH
THROTTLE SENSOR
FUEL METER
SPEEDOMETER LAMP 12V-2W
TURN PILOT INDICATOR (RH) LAMP 12V-2W
TURN PILOT INDICATOR (LH) LAMP 12V-2W
HI BEAM INDICATOR LAMP 12V-2W
HEAD LAMP 12V-35/35W
START BUTTON
CONTROL SWITCH LH
SIDE INDICATOR BUTTON
FLASH BUTTON
HORN (12V-6G)
LAMP LH 12V-10W FRONT SIDE INDICATOR
REAR SIDE INDICATOR LAMP RH 12V-10W
TAIL/STOP LAMP 12V-5/10W
REAR SIDE INDICATOR LAMP LH 12V-10W
STARTER MOTOR
BATTERY 12V-8Ah
FUSE (10 Amps.)
STARTER RELAY
NEUTRAL SWITCH
PULSER COIL
LIGHTING COIL
CHARGING COIL
MAGNETO ASSY
BATTERY CHARGING COIL
SPARK PLUG
H T COIL
ASSY. REGULATOR
CDI UNIT
FUEL TANK UNIT
IGNITION SWITCH (STEERING CUM IGNITION LOCK)
IGNITION CUT-OFF SWITCH
D.C. CUT-OFF SWITCH
REAR BRAKE SWITCH
RELAY ASSY. (FLASHER)
BEEPER
COUPLER-NATURAL (LOCK TYPE)
COUPLER-RED
COUPLER-GREEN
COUPLER-BLUE
COUPLER-NATURAL
COUPLER-RED (LOCK TYPE)
COUPLER-NATURAL (LOCK TYPE)
COUPLER-NATURAL
COUPLER-NATURAL
COUPLER-NATURAL

TROUBLE SHOOTING GUIDE

This is not an exhaustive list, giving every possible cause for each problem listed. It is meant simply as a rough guide to assist the trouble shooting for some of the more common difficulties.

For details of Electrical Component Checking , please refer "Electricals : Maintenance & Checking" .

STARTING TROUBLE

A) No fuel supply

- No Fuel in fuel tank
- Clogged fuel filter in fuel cock
- Vacuum line disconnected
- Leakage from vacuum side of Fuel cock
- Fuel cock fitment not at 45^0 angle with respect to fuel tank centre line

B) Flooding

- Float valve stuck / Worn out
- Fuel cock diaphragm damaged / remains open
- Tank cap air vent obstructed

C) No. Spark / Weak spark

- Spark plug dirty / broken / maladjusted
- Spark plug cap short
- Pulser coil short
- Charging coil short / open
- CDI unit defective
- Wiring short / open
- Ignition switch short
- Rotor Key broken

D) Compression Low

- Spark plug loose
- Cylinder head gasket leak / cylinder head loose
- Cylinder block / piston worn out
- Worn out piston rings / sticky rings
- Valve seat improper / valve bent / carbon accumulation on seating surface

INCORRECT RUNNING

A) Lack of Power

- Spark plug loose
- Cylinder head gasket leak / cylinder head loose
- Cylinder block / piston worn out
- Worn out piston rings / sticky rings
- Valve seat improper / valve bent / carbon accumulation on seating surface

B) Fuel air mixture improper

- Pilot jet clogged
- Incorrect position of needle jet
- Carburettor holder loose
- Inlet manifold bolt loose
- Insulator 'O' rings cut or insulator loose
- Air filter clogged / or dry i.e.. (oil not applied)
- Fuel supply insufficient from fuel valve / excess fuel supply

C) Lack of power at high speed

- Spark plug gap incorrect
- H. T. Coil defective
- Clutch slippage
- Main jet clogged or of wrong size
- Choke stuck open
- Adulterated fuel
- Compression weak
- Insufficient fuel supply from fuel cock
- Clogged air filter

KNOCKING

- TRICS not working properly (i.e. Ignition timing not returning to **16^0 BTDC FROM 30^0 BTDC)**
- Excessive carbon build up on piston top
- Incorrect carburettor setting
- Adulterated fuel
- Wrong heat range spark plug

CLUTCH SLIPPAGE

- No clutch lever play
- Friction plates worn out / burnt
- Steel plates warped or worn out
- Clutch spring weak
- Hub clutch unevenly worn out
- Clutch release mechanism faulty
- Plunger protruding above crankcase cover surface
- Engine oil level low

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GEAR SHIFTING NOT PROPER

- Clutch not disengaging properly
- Clutch / Gear cable play improper
- Gear shifter stem worn out
- Cross worn out
- Gear shifter slider jam

KICK SLIP

- Clutch plates burnt
- Gear kick and ratchet kick teeth chipped off
- Spring for gear kick weak
- Guide kick broken / loose

STEERING COLUMN

A. Becomes tight

- Bearing races pitted.
- Balls pitted.
- Race fitment improper

B. Excessive play

- Bearing races not fitted properly or lock ring nut loose.

POOR BRAKING

- Control pedal or lever play not adjusted properly.
- Brake shoes lining worn out or oily.
- Brake drums scratched.

INEFFICIENCY OF FRONT SUSPENSION

1. Noisy.

- Front Shock Absorber upper / lower mounting loose
- Front Shock Absorber weak

2. Riding instability

- Play between front brake drum and axle excessive
- Hub pin or roller bearings worn out
- Front shock absorber weak or hard
- Excessive clearance between engine foundation arm and engine link assly

INEFFICIENCY OF REAR SUSPENSION

1. Noisy

- Spring weak or broken
- Top bracket (rubber block) for rear shock absorber loose or broken.

ELECTRICAL

A. Fuel Gauge not working

- Tank unit defective / loose contact at resistor coil
- Fuel meter in instrument panel defective
- No supply to tank unit.

B. Bulb fusing.

- Regulator defective.
- Bulb holder short
- Loose contact in holder.

C. Bulbs do not light

- Bulb fused
- Improper earthing
- Switch defective
- Loose or improper connections
- L. T. coil loose connection or short / open

D. Horn not working

- Horn defective
- Connections loose
- Switch defective
- Horn coil defective

E. Brake light remains ON

- Sticky switch

F. Vehicle not starting / not getting off

- Ignition ON - OFF switch not working

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For effective overhaul and optimum performance :

- **Get fully familiarised with dismantling / assembly procedures as given in this manual**
- **Always use genuine Bajaj Spares for replacement.**
- **Use special tools developed for disassembling and assembly procedures.**

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